



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

MAERTENS et al.

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Group: 1631

Filed: June 5, 2001

Examiner: Martinell

For: NEW SEQUENCES OF HEPATITIS C VIRUS GENOTYPES AND
THEIR USE AS THERAPEUTIC AND DIAGNOSTIC AGENTS

* * * * *

August 25, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

STATEMENT

The attached paper and computer-readable copies of the Sequence Listing are
the same. No new matter has been added.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____

B. J. Sadoff
Reg. No. 36,663

BJS:plb
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100



SEQUENCE LISTING

<110> Innogenetics N.V.

<120> New sequences of hepatitis C virus genotypes for diagnosis, prophylaxis and therapy

<130> 35

<160> 284

<170> PatentIn version 3.1

<210> 1

<211> 213

<212> DNA

<213> hepatitis C virus

<400> 1

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tacatcaagg ccacagcggc tgcaagggcc gcaggcctcc ggaacccgga ctttcttgtc 180
tgcggagatg atctggctcgt ggtggctgag agt 213

<210> 2

<211> 71

<212> PRT

<213> hepatitis C virus

<400> 2

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Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
20 25 30
Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
35 40 45
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Arg Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp
 50 55 60

Leu Val Val Val Ala Glu Ser
 65 70

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<211> 213

<212> DNA

<213> hepatitis C virus

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 tacatcaagg ccacagcggc tgcaagggcc gcaggcctcc ggaacccgga ctttcttgtc 180
 tgcggagatg atctggctcgt ggtggctgag agt 213

<210> 4

<211> 71

<212> PRT

<213> hepatitis C virus

<400> 4

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly
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Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
 20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
 35 40 45

Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp
 50 55 60

Leu Val Val Val Ala Glu Ser
 65 70

<210> 5

<211> 213

<212> DNA

<213> hepatitis C virus

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tacatcaaag ccacagcggc cgcaaaagcc gcaggcctcc ggagcccgga ctttcttgtc 180
tgcgagatg atctggtcgt ggtggctgag agt 213

<210> 6

<211> 71

<212> PRT

<213> hepatitis C virus

<400> 6

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly
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Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
35 40 45

Lys Ala Ala Gly Leu Arg Ser Pro Asp Phe Leu Val Cys Gly Asp Asp
50 55 60

Leu val val val Ala Glu Ser
65 70

<210> 7

<211> 213

<212> DNA

<213> hepatitis C virus

<400> 7
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tacatcaaag ccacagcggc cgcaaaagcc gcaggcctcc ggagcccgga ctttcttgtc 180
tgcgagatg atctggtcgt ggtggctgag agt 213

<210> 8
 <211> 71
 <212> PRT
 <213> hepatitis C virus

<400> 8
 Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly
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 Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
 20 25 30
 Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
 35 40 45
 Lys Ala Ala Gly Leu Arg Ser Pro Asp Phe Leu Val Cys Gly Asp Asp
 50 55 60
 Leu Val Val Val Ala Glu Ser
 65 70

<210> 9
 <211> 213
 <212> DNA
 <213> hepatitis C virus

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 tacatcaagg ccacagcggc tgcaaaagcc gcaggcctcc ggaacccgga ctttcttggt 180
 tgcggagatg atttggtcgt ggtggctgag agt 213

<210> 10
 <211> 71
 <212> PRT
 <213> hepatitis C virus

<400> 10
 Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly
 1 5 10 15

Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
 20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
 35 40 45

Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp
 50 55 60

Leu Val Val Val Ala Glu Ser
 65 70

<210> 11

<211> 213

<212> DNA

<213> hepatitis C virus

<400> 11
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 tacatcaagg ccacagcggc tgcaaaagcc gcaggcctcc ggaacccgga ctttcttgtt 180
 tgcggagatg atttggtcgt ggtggctgag agt 213

<210> 12

<211> 71

<212> PRT

<213> hepatitis C virus

<400> 12

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly
 1 5 10 15

Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
 20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
 35 40 45

Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp
 50 55 60

Leu Val Val Val Ala Glu Ser
 65 70

<210> 13

<211> 541

<212> DNA

<213> hepatitis C virus

<400> 13
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cctctatgtc cttaccaacg actgttccaa tagcagtatt gtgtatgagg ccgatgacgt 240
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gacccagtg acacctacag tggcagtcag gtacgtcgga gcaaccaccg cttcgatacg 360
caggcatgta gacatgttgg tgggcgcggc cacgatgtgc tctgctctct acgtgggtga 420
tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480
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<210> 14

<211> 180

<212> PRT

<213> hepatitis C virus

<400> 14

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val
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Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
20 25 30
Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
35 40 45
Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
50 55 60
Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
65 70 75 80
Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr

85

90

95

Ser Ala Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His Val Asp Met Leu Val Gly
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
165 170 175

His Arg Met Ala
180

<210> 15

<211> 541

<212> DNA

<213> hepatitis C virus

<400> 15
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gacccagtg acacctacag tggcagtcag gtacgtcgga gcaaccaccg cttcgatacg 360
caggcatgta gacatattgg tgggcgcggc cacaatgtgc tctgctctct acgtgggtga 420
tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480
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<210> 16

<211> 180

<212> PRT

<213> hepatitis C virus

<400> 16

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
20 25 30

Cys Ser Phe Ser Ile Phe Leu Pro Ala Leu Phe Ser Cys Leu Ile His
35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
65 70 75 80

Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr
85 90 95

Ser Ala Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His Val Asp Ile Leu Val Gly
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
165 170 175

His Arg Met Ala
180

<210> 17

<211> 541

<212> DNA

<213> hepatitis C virus

<400> 17

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 gacccagtg acacctacag tggcagtcag gtacgtcgga gcaaccaccg cttcgatacg 360
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<210> 18

<211> 180

<212> PRT

<213> hepatitis C virus

<400> 18

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Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
 20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
 35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr val Leu
 50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile val Tyr Glu Ala Asp Asp val
 65 70 75 80

Ile Leu His Thr Pro Gly Cys val Pro Cys val Gln Asp Gly Asn Thr
 85 90 95

Ser Ala Cys Trp Thr Pro val Thr Pro Thr val Ala val Arg Tyr val
 100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His val Asp Ile Leu val Gly
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr val Gly Asp Met Cys Gly Ala
 130 135 140

val Phe Leu val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
165 170 175

His Arg Met Ala
180

<210> 19
<211> 541
<212> DNA
<213> hepatitis C virus

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gaccccgagt acacctacag tggcagtcaa gtacgtcgga gcaaccaccg cttcgatacg 360
cagtcgatgtg gacctattag tgggcgcggc cacgatgtgc tcagcgctct acgtgggtga 420
tatgtgtggg gccgtcttcc ttgtgggaca agccttcacg ttcagacctc gtcgccatca 480
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<210> 20
<211> 180
<212> PRT
<213> hepatitis C virus

<400> 20
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Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
20 25 30
Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
35 40 45
Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu

50 55 60
 Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
 65 70 75 80
 Ile Leu His Thr Pro Gly Cys Ile Pro Cys Val Gln Asp Gly Asn Thr
 85 90 95
 Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Lys Tyr Val
 100 105 110
 Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly
 115 120 125
 Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
 130 135 140
 Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
 145 150 155 160
 Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
 165 170 175
 His Arg Met Ala
 180

<210> 21
 <211> 541
 <212> DNA
 <213> hepatitis C virus

<400> 21
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 gaccccgagt acacctacag tggcagtc aa gtacgtcgga gcaaccaccg cttcgatacg 360
 cagtcattgtg gacctattag tgggcgcggc cacgatgtgc tctgcgctct acgtgggtga 420
 catgtgtggg gctgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480
 aacgggtccag acctgtaact gctcgctgta cccaggccat ctttcaggac atcgaatggc 540
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<210> 22
 <211> 180
 <212> PRT
 <213> hepatitis C virus

<400> 22

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 1 5 10 15
 Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
 20 25 30
 Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
 35 40 45
 Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
 50 55 60
 Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
 65 70 75 80
 Ile Leu His Thr Pro Gly Cys Ile Pro Cys Val Gln Asp Gly Asn Thr
 85 90 95
 Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Lys Tyr Val
 100 105 110
 Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly
 115 120 125
 Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
 130 135 140
 Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
 145 150 155 160
 Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
 165 170 175
 His Arg Met Ala
 180

<210> 23
 <211> 541
 <212> DNA
 <213> hepatitis C virus

<400> 23
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 gaccccagta acacctacag tggcagtcag gtacgtcggg gcaaccaccg cttcgatacg 360
 cagtcattgtg gacctgttag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420
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 aacgggtccag acctgtaact gtcgctgta ccaggccat ctttcaggac atcgcatggc 540
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<210> 24
 <211> 180
 <212> PRT
 <213> hepatitis C virus

<400> 24
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 Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
 20 25 30
 Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
 35 40 45
 Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
 50 55 60
 Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
 65 70 75 80
 Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr
 85 90 95
 Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val
 100 105 110
 Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
 165 170 175

His Arg Met Ala
 180

<210> 25

<211> 541

<212> DNA

<213> hepatitis C virus

<400> 25
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 tgctctgttc tcttgcttaa tccatccagc agctggtcta gagtggcgga atacgtctgg 180
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 cagtcattgtg gacctgttag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420
 tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacccc gccgcatca 480
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<210> 26

<211> 180

<212> PRT

<213> hepatitis C virus

<400> 26

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val
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Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly

20

25

30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
 35 40 45

Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
 50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
 65 70 75 80

Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr
 85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val
 100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
 165 170 175

His Arg Met Ala
 180

<210> 27

<211> 541

<212> DNA

<213> hepatitis C virus

<400> 27

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 tgctctgttc tcttgcttaa tccatccagc agctggtcta gagtggcgga atacgtctgg 180
 cctctatgtc cttaccaacg actgttccaa tagtagtatt gtgtatgagg ccatgacgt 240
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 gacccagta acacctacag tggcagtcag gtacgtcggg gcaaccaccg cttcgatacg 360
 cagtcattgtg gacctgttag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420

tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacccc gccgccatca 480
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<210> 28
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<212> PRT
<213> hepatitis C virus

<400> 28

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly
20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His
35 40 45

Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val
65 70 75 80

Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr
85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly
165 170 175

His Arg Met Ala
180

<210> 29
 <211> 287
 <212> DNA
 <213> hepatitis C virus

<400> 29
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 ctcgcgcgca ggctcctccc ccaagttggg acgagatgtg gaagtgtctc gtacggctta 180
 agccaacact acatggacct acgcctcttc tatatcggtt ggggcctgtc caaaatgaaa 240
 tctgcttgac acaccccatc acaaaatata tcatggcatg catgtca 287

<210> 30
 <211> 95
 <212> PRT
 <213> hepatitis C virus

<400> 30
 Asp Phe Trp Glu Ser Val Phe Thr Gly Leu Thr His Ile Asp Ala His
 1 5 10 15
 Phe Leu Ser Gln Thr Lys Gln Gln Gly Leu Asn Phe Ser Phe Leu Thr
 20 25 30
 Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser
 35 40 45
 Trp Asp Glu Met Trp Lys Cys Leu Val Arg Leu Lys Pro Thr Leu His
 50 55 60
 Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile
 65 70 75 80
 Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser
 85 90 95

<210> 31
 <211> 401
 <212> DNA
 <213> hepatitis C virus

<400> 31
 tccaaaatga aatctgcttg acacaccccg tcacaaaata cattatggca tgcattgtcag 60
 ctgatctgga agtaaccacc agcacctggg tgttgcttgg aggggtcctc gcggccctag 120
 cggcctactg cttgtcagtc ggctgcgttg taatcgtggg tcatatcgag ctgggggggca 180
 agccggcact cgttccagac aaggaggtgt tgtatcaaca gtacgatgag atggaggagt 240
 gctcgcaagc cgccccatac atcgaacaag ctcaggtaat agcccaccag ttcaaggaga 300
 aaatccttgg actgctgcag cgagccaccc aacaacaagc tgtcattgag cccgtaatag 360
 cttccaactg gcaaaagctt gaaaccttct ggcacaagca t 401

<210> 32

<211> 133

<212> PRT

<213> hepatitis C virus

<400> 32

Gln Asn Glu Ile Cys Leu Thr His Pro Val Thr Lys Tyr Ile Met Ala
 1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu
 20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys
 35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Leu Val
 50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys
 65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln
 85 90 95

Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln
 100 105 110

Ala Val Ile Glu Pro Val Ile Ala Ser Asn Trp Gln Lys Leu Glu Thr
 115 120 125

Phe Trp His Lys His
 130

<210> 33

<211> 401
 <212> DNA
 <213> hepatitis C virus

<400> 33
 tccaaaatga aatctgcttg acacaccccg tcacaaaata cattatggca tgcattgtcag 60
 ctgatctgga agtaaccacc agcacctggg tgttgcttgg aggggtcctc gcggccctag 120
 cggcctactg cttgtcagtc ggctgcgttg taatcgtggg tcatatcgag ctgggggggca 180
 agccggcact cgttccagac aaggaggtgt tgtatcaaca gtacgatgag atggaggagt 240
 gctcgcaagc cgccccatac atcgaacaag ctgaggtaat agcccaccag ttcaaggaga 300
 aaatccttgg actgctgcag cgagccaccc aacaacaagc tgtcattgag cccgtaatag 360
 cttccaactg gcaaaagctt gaaaccttct ggcacaagca t 401

<210> 34
 <211> 133
 <212> PRT
 <213> hepatitis C virus

<400> 34
 Gln Asn Glu Ile Cys Leu Thr His Pro Val Thr Lys Tyr Ile Met Ala
 1 5 10 15
 Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu
 20 25 30
 Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys
 35 40 45
 Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Leu Val
 50 55 60
 Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys
 65 70 75 80
 Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln
 85 90 95
 Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln
 100 105 110
 Ala Val Ile Glu Pro Val Ile Ala Ser Asn Trp Gln Lys Leu Glu Thr
 115 120 125

Phe Trp His Lys His
130

<210> 35

<211> 401

<212> DNA

<213> hepatitis C virus

<400> 35
tccaaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgacag 60
ctgatctgga agtaaccacc agcacctggg ttttgcttgagg aggggtcctc gcggccctag 120
cggcctactg cttgtcagtc ggttggtgtg tgattgtggg tcatatcgag ctgggggggca 180
agccggcaat cgttccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240
gctcacaagc tgccccatat atcgaacaag ctcaggtaat agctcaccag ttcaagggaa 300
aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360
ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 36

<211> 133

<212> PRT

<213> hepatitis C virus

<400> 36

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala
1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu
20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys
35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val
50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys
65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln
85 90 95

Phe Lys Gly Lys Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln
100 105 110

Ala Val Ile Glu Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala
115 120 125

Phe Trp His Lys His
130

<210> 37

<211> 401

<212> DNA

<213> hepatitis C virus

<400> 37
tccaaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgtcag 60
ctgatctgga agtaaccacc agcacctggg ttttgcttgg aggggtcctc gcggccctag 120
cggcctactg cttgtcagtc ggttggtgtg tgattgtggg tcatatcgag ctggggggca 180
agccggcaat cgttccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240
gtcacaagc tgccccatat atcgaacaag cttaggtgat agctcaccag ttcaaggaaa 300
aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360
ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 38

<211> 133

<212> PRT

<213> hepatitis C virus

<400> 38

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala
1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu
20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys
35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val
50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys
65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln
85 90 95

Phe Lys Glu Lys Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln
100 105 110

Ala Val Ile Glu Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala
115 120 125

Phe Trp His Lys His
130

<210> 39

<211> 401

<212> DNA

<213> hepatitis C virus

<400> 39
tccaaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgctag 60
ctgatctgga agtaaccacc agcacctggg ttttgcttgagg aggggtcctc gcggccctag 120
cggcctactg cttgtcagtc ggttggtgttg tgattgtggg tcatatcgag ctgggggggca 180
agccggcaat cgttccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240
gctcacaagc tgccccatat atcgaacaag ctcaggtaat agctcaccag ttcaaggaaa 300
aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360
ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 40

<211> 133

<212> PRT

<213> hepatitis C virus

<400> 40

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala
1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu
20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys

35

40

45

val val ile val gly his ile glu leu gly gly lys pro ala ile val
 50 55 60

pro asp lys glu val leu tyr gln gln tyr asp glu met glu glu cys
 65 70 75 80

ser gln ala ala pro tyr ile glu gln ala gln val ile ala his gln
 85 90 95

phe lys glu lys val leu gly leu leu gln arg ala thr gln gln gln
 100 105 110

ala val ile glu pro ile val thr thr asn trp gln lys leu glu ala
 115 120 125

phe trp his lys his
 130

<210> 41

<211> 509

<212> DNA

<213> hepatitis C virus

<400> 41
 ccatgagcac gaatcctaaa cctcaaagaa aaacaaaaag aaacaccaac cgtcgccac 60
 aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120
 ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgtg 180
 gacggcgctca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaaccg 240
 ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcaggggtg ctgctctccc 300
 ctcgaggctc tcggccta at tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360
 gtaaggatcat cgatacccta acgtgcggat tcgccgatct catgggggtat atcccgtcgc 420
 taggcggccc cattgggggc gtcgcaaggg ctctcgca ca cgggtgtgagg gtccttgagg 480
 acggggtaaa ctatgcaaca ggaattta 509

<210> 42

<211> 169

<212> PRT

<213> hepatitis C virus

<400> 42

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Ala Thr Gly Asn Leu
165

<210> 43

<211> 509

<212> DNA

<213> hepatitis C virus

<400> 43

ccatgagcac gaatcctaaa cctcaaagaa aaacaaaaag aaacaccaac cgtcgcccac	60
aggacgtcaa gttccccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca	120
ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccg	180
gacggcggtca gcctattccc aaggcgcgcc agcccacggg ccggtccttg ggtcaacccg	240
ggtacccttg gcccttttac gccaatgagg gcctcggggtg ggcaggggtg ctgctctccc	300

ctcgaggctc tcggcctaata tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360
gtaagggtcat cgatacccta acgtgcggat tcgccgatct catgggggtat atccccgctcg 420
taggcggccc cattgggggc gtcgcaaggg ctctcgacac cggtgtgagg gtccttgagg 480
acggggtaaa ctatgcaaca gggaattta 509

<210> 44

<211> 169

<212> PRT

<213> hepatitis C virus

<400> 44

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Ala Thr Gly Asn Leu
165

<210> 45

<211> 580

<212> DNA

<213> hepatitis C virus

<400> 45

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aacgtgcgga ttcgccgatc tcattgggta tatcccgtc gtaggcggcc ccattggggg 60
cgtcgcaagg gctctgcac acggtgtgag ggtccttgag gacggggtaa actatgcaac 120
aggggaattta cccggttgct ctttctctat ctttattctt gctcttctct cgtgtctgac 180
cgttccggcc tctgcagttc cctaccgaaa tgcctctggg atttatcatg ttaccaatga 240
ttgccccaaac tcttccatag tctatgaggc agataacctg atcctacacg cacctggttg 300
cgtgccttgt gtcattgacag gtaattgtgag tagatgctgg gtccaaatta cccctacact 360
gtcagccccg agcctcggag cagtcacggc tcctcttcgg agagccgttg actacctagc 420
gggaggggct gccctctgct ccgcgttata cgtaggagac gcgtgtgggg cactattctt 480
ggtagggcaa atgttcacct ataggcctcg ccagcacgct acggtgcaga actgcaactg 540
ttccatttac agtggccatg ttaccggcca ccgatggca 580
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<210> 46

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 46

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Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly 1
1 5 10 15
Pro Ile Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
20 25 30
Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45
Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60
Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80
Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His
85 90 95
Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys
```

100

105

110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val
 115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala
 130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln
 165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met
 180 185 190

Ala

<210> 47

<211> 580

<212> DNA

<213> hepatitis C virus

<400> 47

aacgtgcgga ttcgccgatc tcatggggta tatcccgcctc gtaggcggcc ccattggggg 60
 cgtcgcaagg gctctgcac acggtgtgag ggctccttgag gacggggtaa actatgcaac 120
 agggaaattta cccggttgct ctttctctat ctttattctt gctcttctct cgtgtctgac 180
 cgttccggcc tctgcagttc cctaccgaaa tgcctctggg atttatcatg ttaccaatga 240
 ttgccc aaac tcttccatag tctatgaggc agataacctg atcctacacg cacctggttg 300
 cgtgccttgt gtcacgacag gtaatgtgag tagatgctgg gtccaaatta cccctacact 360
 gtcagccccg agcctcggag cagtcacggc tcctcttcgg agagccgttg actacctagg 420
 gggagggggct gccctctgct ccgcgttata cgtaggagac gcgtgtgggg cactattctt 480
 ggtaggcca atgttcacct ataggcctcg ccagcacgct acggtgcaga actgcaactg 540
 ttccatttac agtggccatg ttaccggcca ccggatggca 580

<210> 48

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 48

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly
1 5 10 15

Pro Ile Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His
85 90 95

Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys
100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val
115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln
165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met
180 185 190

Ala

<210> 49

<211> 959

<212> DNA

<213> hepatitis C virus

<400> 49

ccatgagcac gaatcctaaa cctcaaagaa aaacaaaaag aaacaccaac cgtcgccac 60
aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120
ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgtg 180
gacggcgtca gcctattccc aaggcgcgcc agccacggg ccggtcctgg ggtcaacccg 240
ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcaggggtg ctgctctccc 300
ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360
gtaagggtcat cgatacccta acgtgcggat tcgccgatct catgggggtat atcccgtcgc 420
taggcggccc cattgggggc gtcgcaaggc ctctcgca caaggtgtgagg gtccttgagg 480
acggggtaaa ctatgcaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540
ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600
tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660
tcctacacgc acctggttgc gtgccttggtg tcatgacagg taatgtgagt agatgctggg 720
tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780
gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840
cgtgtggggc actattcttg gtaggccaaa tgttcaccta taggcctcgc cagcacgcta 900
cgggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 50

<211> 319

<212> PRT

<213> hepatitis C virus

<400> 50

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val
180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro
195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro
210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val
225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala
245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys
260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly
275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys
290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala
305 310 315

<210> 51

<211> 959

<212> DNA

<213> hepatitis c virus

<400> 51
ccatgagcac gaatcctaaa cctcaaagaa aaacaaaaag aaacaccaac cgtcgccac 60
aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120
ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgtg 180
gacggcgtca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaaccg 240
ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcagggtgg ctgctctccc 300
ctcgaggctc tcggccta at tggggcccca atgacccccg gcgaaaatcg cgtaatttg 360
gtaagggtcat cgatacccta acgtgcggat tcgccgatct catggggtac atcccgtcg 420
taggcggccc cgttgggggc gtcgcaaggg ctctcgaca cgggtgtgagg gtccttgagg 480
acggggtaaa ctatccaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540
ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600
tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660
tcctacacgc acctggttgc gtgccttgtg tcatgacagg taatgtgagt agatgctggg 720
tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780
gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840
cgtgtggggc actattcttg gtaggccaaa tgttcaccta taggcctcgc cagcacgcta 900
cgggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 52

<211> 319

<212> PRT

<213> hepatitis C virus

<400> 52

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val
180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro
195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro
210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val
225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala
245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys
260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly
275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys
290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala
305 310 315

<210> 53

<211> 959

<212> DNA

<213> hepatitis C virus

<400> 53
ccatgagcac gaatcctaaa cctcaaagaa aaacccaaaag aaacaccaac cgtegccccac 60
aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120
ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgtg 180
gacggcgta gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaacccg 240
ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcaggggtg ctgctctccc 300
ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360
gtaagggtcat cgatacccta acgtgcggat tcgccgatct catgggggtay atcccgtcgc 420
taggcggccc crtggggggc gtcgcaaggg ctctcgca caagggtgagg gtccttgagg 480
acggggtaaa ctatscaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540
ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600
tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660
tcctacacgc acctggttgc gtgccttggtg tcatgacagg taatgtgagt agatgctggg 720
tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780
gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840
cgtgtggggc actattcttg gtagggccaaa tgttcaccta taggcctcgc cagcacgcta 900
cggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 54

<211> 319

<212> PRT

<213> hepatitis C virus

<400> 54

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val
180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro
195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro
210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val
225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala
245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys
260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly
275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys
290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala
305 310 315

<210> 55

<211> 354

<212> DNA

<213> hepatitis C virus

<220>

<221> misc_feature

<222> (191)..(191)

<223> "n" is any nucleotide

<400> 55
accaccggag cttctatcac atactccact tacggcaagt tccttgctga tggaggggtgt 60
tcaggcggcg cgcacgacgt gatcatatgc gacgagtgcc attcccagga cgccaccacc 120
attcttgagg taggcactgt ccttgaccag gcagagacgg ctggagctag gctcgtcgtc 180
ttggccacgg ncacccctcc cggcagtgtg acaacgcccc accccaacat cgaggaagtg 240
gccctgcctc aggaggggga gggtcccttc tacggcagag ccattcccct tgcttttata 300
aagggtggta ggcattctcat cttctgccat tccaagaaaa attgtgatga actc 354

<210> 56

<211> 118

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (64)..(64)

<223> "Xaa" is any amino acid

<400> 56

Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala
1 5 10 15

Asp Gly Gly Cys Ser Gly Gly Ala His Asp Val Ile Ile Cys Asp Glu
20 25 30

Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr Val Leu
35 40 45

Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Xaa
50 55 60

Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu Glu Val
65 70 75 80

Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Gly Arg Ala Ile Pro
85 90 95

Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys
100 105 110

Lys Asn Cys Asp Glu Leu
115

<210> 57

<211> 354

<212> DNA

<213> hepatitis C virus

<220>

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<222> (185)..(185)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (191)..(191)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (276)..(276)

<223> "n" is any nucleotide

<400> 57

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tcaggcggcg cgtatgacgt gatcatatgc gacgagtgcc attcccagga cgccaccacc 120

attcttgggga taggcactgt ccttgaccag gcagagacgg ctggagctag gctcgtcgtc 180

ttggncacgg ncaccctcc cggcagtgtg acaacgcccc accccaacat cgaggaagtg 240

gccctgcctc aggaggggga ggttcccttc tacggnagag ccattcccct tgcttttata 300

aagggtggta ggcattctcat cttctgccat tccaagaaaa aatgtgatga actt

354

<210> 58

<211> 133

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (62)..(62)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (64)..(64)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (92)..(92)

<223> "Xaa" is any amino acid

<400> 58

Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala
1 5 10 15

Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Val Ile Ile Cys Asp Glu
20 25 30

Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr Val Leu
35 40 45

Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Xaa Thr Xaa
50 55 60

Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu Glu Val
65 70 75 80

Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Xaa Arg Ala Ile Pro
85 90 95

Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys
100 105 110

Lys Lys Cys Asp Glu Leu Arg Gln Ala Thr Asp Gln Pro Gly Arg Glu
115 120 125

Arg Pro Trp Glu Tyr
130

<210> 59

<211> 357

<212> DNA

<213> hepatitis C virus

<220>

<221> misc_feature

<222> (38)..(38)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (76)..(76)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (79)..(79)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (151)..(151)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (232)..(232)
<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (349)..(349)

<223> "n" is any nucleotide

<400> 59
atggctttca tgtctccgga cttggagggtc attaccanca cttgggttct ggtggggggc 60
gttgtggcga ccctgncgnc ctactgcttg acggtgggtt cggtagccat agtcggtagg 120
atcatcctct ctgggaaacc tgccatcatt nccgataggg aggtattata ccagcaattt 180
gatgagatgg aggagtgtc ggcctcgttg ccctatatgg acgaaacacg tnccattgcc 240
ggacaattca aagagaaagt gtcggttc atcagcacga ccggccagaa ggctgaaact 300
ctgaagccgg cagccacgtc tgtgtggaac aaggctgac agttctggnc cacatac 357

<210> 60

<211> 128

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (13)..(13)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (26)..(27)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (51)..(51)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (78)..(78)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (117)..(117)

<223> "Xaa" is any amino acid

<400> 60

Met Ala Phe Met Ser Pro Asp Leu Glu Val Ile Thr Xaa Thr Trp Val
1 5 10 15

Leu Val Gly Gly Val Val Ala Thr Leu Xaa Xaa Tyr Cys Leu Thr Val
20 25 30

Gly Ser Val Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala
35 40 45

Ile Ile Xaa Asp Arg Glu Val Leu Tyr Gln Gln Phe Asp Glu Met Glu
50 55 60

Glu Cys Ser Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Xaa Ile Ala
65 70 75 80

Gly Gln Phe Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln
85 90 95

Lys Ala Glu Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala
100 105 110

Asp Gln Phe Trp Xaa Thr Tyr Met Trp Asn Phe Ile Ser Gly Ile Gln
115 120 125

<210> 61

<211> 357

<212> DNA

<213> hepatitis C virus

<220>
 <221> misc_feature
 <222> (38)..(38)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (174)..(174)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (339)..(339)
 <223> "n" is any nucleotide

<400> 61
 atggccttgca tgtctgcgga cctggagggtc attaccanca cttgggttct ggtgggggggc 60
 gttgtggcgn ccctggcggc ctactgcttg acggtggggt cggtagccat agtcggtagg 120
 atcatcctct ctgggaaacc tgccatcatt cccgataggg aggcattata ccancaattt 180
 gatgagatgg aggagtgtc ggcctcgttg ccctatatgg acgagacacg tgccattgcc 240
 ggacaattca aagagaaagt gtcgggcttc atcagcacga ccggccagaa ggctgaaact 300
 ctgaagccgg cagccacgtc tgtgtggaac aaggctganc agttctgggc cacatac 357

<210> 62
 <211> 128
 <212> PRT
 <213> hepatitis C virus

<220>

<221> MISC_FEATURE
 <222> (13)..(13)
 <223> "Xaa" is any amino acid

<220>
 <221> MISC_FEATURE
 <222> (24)..(24)
 <223> "Xaa" is any amino acid

<220>
 <221> MISC_FEATURE
 <222> (58)..(58)
 <223> "Xaa" is any amino acid

<220>
 <221> MISC_FEATURE
 <222> (113)..(113)
 <223> "Xaa" is any amino acid

<400> 62

Met	Ala	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Ile	Thr	Xaa	Thr	Trp	Val
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Leu	Val	Gly	Gly	Val	Val	Ala	Xaa	Leu	Ala	Ala	Tyr	Cys	Leu	Thr	Val
		20						25					30		
Gly	Ser	Val	Ala	Ile	Val	Gly	Arg	Ile	Ile	Leu	Ser	Gly	Lys	Pro	Ala
		35					40					45			
Ile	Ile	Pro	Asp	Arg	Glu	Ala	Leu	Tyr	Xaa	Gln	Phe	Asp	Glu	Met	Glu
	50					55					60				
Glu	Cys	Ser	Ala	Ser	Leu	Pro	Tyr	Met	Asp	Glu	Thr	Arg	Ala	Ile	Ala
65					70					75					80
Gly	Gln	Phe	Lys	Glu	Lys	Val	Leu	Gly	Phe	Ile	Ser	Thr	Thr	Gly	Gln
				85					90					95	
Lys	Ala	Glu	Thr	Leu	Lys	Pro	Ala	Ala	Thr	Ser	Val	Trp	Asn	Lys	Ala
			100					105					110		

Xaa Gln Phe Trp Ala Thr Tyr Met Trp Asn Phe Ile Ser Gly Ile Gln
 115 120 125

<210> 63
 <211> 28
 <212> DNA
 <213> artificial

<220>
 <221> misc_feature
 <223> HCPr161

<400> 63
 accggaggcc aggagagtga tctcctcc 28

<210> 64
 <211> 28
 <212> DNA
 <213> artificial

<220>
 <221> misc_feature
 <223> HCPr162

<400> 64
 gggctgctct atcctcatcg acgccatc 28

<210> 65
 <211> 28
 <212> DNA
 <213> artificial

<220>
 <221> misc_feature
 <223> HCPr163

<400> 65
gccagaggct cggaaggcga tcagcgct

28

<210> 66

<211> 28

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr164

<400> 66
gagctgctct gtcctcctcg acgccgca

28

<210> 67

<211> 20

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr23

<400> 67
ctcatgggggt acattccgct

20

<210> 68

<211> 27

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr54

<400> 68

ctattaccag ttcatcatca tatccca

27

<210> 69

<211> 24

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr116

<400> 69

ttttaaatac atcatgrctg yatg

24

<210> 70

<211> 33

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr66

<400> 70

ctattattgt atcccrctga tgaarttcca cat

33

<210> 71

<211> 36

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr118

<400> 71

actagtcgac taytgatccr ctatrwartt ccacat

36

<210> 72
<211> 25
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr117

<400> 72
ttttaaatatc atcgcrctgc atgca

25

<210> 73
<211> 36
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr119

<400> 73
actagtcgac tarttgcata gcckrttcat ccaytg

36

<210> 74
<211> 34
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr131

<400> 74
ggaattctag acctctggga ygaraytgga artg

34

<210> 75
<211> 31
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCP130

<400> 75
ggaattctag acgctaycar gcacgttgyg c

31

<210> 76
<211> 23
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCP134

<400> 76
catatagatg cccacttcct atc

23

<210> 77
<211> 16
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCP3

<400> 77
gtgtgccagg accatc

16

<210> 78
<211> 20
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr4

<400> 78
gacatgcatg tcatgatgta

20

<210> 79
<211> 29
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr152

<400> 79
tacgcctctt ctatatcggt tggggcctg

29

<210> 80
<211> 26
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr52

<400> 80
atggtgggta aggtcatcga taccct

26

<210> 81

<211> 25
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr41

<400> 81
cccgggaggt ctcgtagacc gtgca

25

<210> 82
<211> 29
<212> DNA
<213> artificial

<220>
<221> misc_feature
<223> HCPr40

<400> 82
ctattaaaga tagagaaaga gcaaccggg

29

<210> 83
<211> 12
<212> PRT
<213> hepatitis C virus

<400> 83
Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu
1 5 10

<210> 84
<211> 12
<212> PRT
<213> hepatitis C virus

<400> 84

Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val
1 5 10

<210> 85

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 85

Val Tyr Glu Ala Asp Asp Val Ile Leu His Thr
1 5 10

<210> 86

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 86

Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala
1 5 10

<210> 87

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 87

Val Gln Asp Gly Asn Thr Ser Thr Cys Trp Thr Pro Val
1 5 10

<210> 88

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 88

Val Met Thr Gly Asn Val Ser Arg Cys Trp Val Gln Ile
1 5 10

<210> 89

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 89

Val Arg Tyr Val Gly Ala Thr Thr Ala Ser
1 5 10

<210> 90

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 90

Ala Pro Ser Leu Gly Ala Val Thr Ala Pro
1 5 10

<210> 91

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 91

Arg Pro Arg Arg His Gln Thr Val Gln Thr
1 5 10

<210> 92

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 92

Arg Pro Arg Gln His Ala Thr Val Gln Asn
1 5 10

<210> 93

<211> 9

<212> PRT

<213> hepatitis C virus

<400> 93

Gln Pro Thr Gly Arg Ser Trp Gly Gln
1 5

<210> 94

<211> 8

<212> PRT

<213> hepatitis C virus

<400> 94

Val Gln Asp Gly Asn Thr Ser Thr
1 5

<210> 95

<211> 8

<212> PRT

<213> hepatitis C virus

<400> 95

Val Gln Asp Gly Asn Thr Ser Ala
1 5

<210> 96

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 96

Val Lys Tyr Val Gly Ala Thr Thr Ala Ser
1 5 10

<210> 97

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 97

Leu Gly Gly Lys Pro Ala Ile Val Pro Asp Lys Glu Val Leu Tyr Gln
1 5 10 15

Gln Tyr Asp Glu
20

<210> 98

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 98

Leu Gly Gly Lys Pro Ala Leu Val Pro Asp Lys Glu Val Leu Tyr Gln
1 5 10 15

Gln Tyr Asp Glu
20

<210> 99

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 99

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln
1 5 10 15

Phe Lys Glu Lys
20

<210> 100

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 100

Ile Ala His Gln Phe Lys Glu Lys Val Leu Gly Leu Leu Gln Arg Ala
1 5 10 15

Thr Gln Gln Gln
20

<210> 101

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 101

Ile Ala His Gln Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala
1 5 10 15

Thr Gln Gln Gln
20

<210> 102

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 102

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Ala Leu Tyr Gln
1 5 10 15

Gln Phe Asp Glu
20

<210> 103

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 103

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Gln
1 5 10 15

Gln Phe Asp Glu
20

<210> 104

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 104

Ser Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln
1 5 10 15

Phe Lys Glu Lys
20

<210> 105

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 105

Ile Ala Gly Gln Phe Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr
1 5 10 15

Gly Gln Lys Ala
20

<210> 106

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 106

ctccactgta accgaaaagg acatcagggg cgaggaggag gtctatcagt gttgtgacct	60
ggagcccga gcccgaagg caattaccgc cctaacagag agactctacg tgggcggtcc	120
catgcataac agcaaggagg acctgtgcgg gtatcgagca tgcgcgcaa gcggcggtcta	180
caccaccagc ttcgggaaca cactgacgtg ctacctcaaa gcctcagccg ctatcaaagc	240
ggcgggggctg agagactgca ccatgttggt ctgtggtgat gacctggttg tcatcgctga	300
gagcgatggc gtagaggagg acaaacgacc cctcggagcc	340

<210> 107
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<400> 107
 Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
 1 5 10 15
 Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr
 20 25 30
 Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
 35 40 45
 Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
 50 55 60
 Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Lys Ala
 65 70 75 80
 Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95
 Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Pro Leu Gly
 100 105 110
 Ala

<210> 108
 <211> 340
 <212> DNA
 <213> hepatitis C virus

<400> 108
 ctccactgta accgaaaagg acatcagggg cgaggaggag gtatatcagt gttgtgacct 60
 ggagcccagag gcccgagag caattaccgc cctaacagag agactctacg tgggcggtcc 120
 catgcataac agcaggggag acctgtgcgg gtatcgcaga tgccgtgcga gcggcgtcta 180
 caccaccagc ttcgggaaca cactgacgtg ctatctcaaa gcctcagccg ctatcagagc 240
 ggcggggctg agagactgca ccatgttggt ctgtggtgat gacctggtcg tcattgctga 300

aagcgatggc gtagaggagg acaaacgagc cctcggagcc

340

<210> 109

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 109

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Arg Ala Ile Thr Ala Leu Thr
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Arg Gly Asp Leu
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
100 105 110

Ala

<210> 110

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 110

ctccactgta accgaaaaag acatcagggg cgaggaggag gtatatcagt gttgtgacct 60

ggagcccgaa gcccgcaagg taattaccgc cctaacagag agactctatg tgggcggtcc 120

catgcataat agcaaaggag acctgtgcgg gtatcgcaga tgccgcgcaa gcggcgtcta 180

caccaccagc ttcgggaaca cactgacgtg ctatctcaaa gcctcagccg ccatcagggc 240

gtcagggctg agagactgca ctatgctggg ctatggtgac gacctggctg tcattgccga 300

gagcgatggc gtagaggagg acaaacgagc cctcggagtc

340

<210> 111

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 111

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
65 70 75 80

Ser Gly Leu Arg Asp Cys Thr Met Leu Val Tyr Gly Asp Asp Leu Val
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
100 105 110

Val

<210> 112

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 112

ctccactgta accgaaaagg acatcagggg cgaggaggag gtgtatcagt gttgtgacct 60

ggagcccag gcccgaagg caattactgc cctaacagag agactctatg tgggcggtcc 120

catgcataac agcaaggag acctgtgtgg gtatcgaga tgccgcgcaa gcggcgtcta 180

caccaccagc ttcgggaaca cactgacgtg ctacctcaaa gcctcagccg ctatcagagc 240

ggcggggctg agagactgca ccatgttggt ctgtggtgat gacctggtcg tcatcgctga 300
gagcgatggc gttgaggagg acaaacgagc cctcggagcc 340

<210> 113
<211> 113
<212> PRT
<213> hepatitis C virus

<400> 113
Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
1 5 10 15
Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr
20 25 30
Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
35 40 45
Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50 55 60
Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
65 70 75 80
Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
85 90 95
Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
100 105 110
Ala

<210> 114
<211> 340
<212> DNA
<213> hepatitis C virus

<400> 114
ctccacggtg accgaaaggg atatcaggac cgaggaagag atctaccagt gctgcgacct 60
ggagcccgaa gcccgcaagg tgatatccgc cctaacggaa agactctacg tgggcggtcc 120
catgtacaac tccaaggggg acctatgcgg gcaacggagg tgccgcgcaa gcgggggtcta 180
caccaccagc ttcgggaaca ctgtaacgtg ttatctcaag gccgttgcgg ctactagggc 240

cgcagggtctg aaagggttgca gcatgctggt ttgtggagac gacttagtcg tcatctgcga 300
gagcggcggc gtagaggagg atgcaagagc cctccgagcc 340

<210> 115
<211> 113
<212> PRT
<213> hepatitis C virus

<400> 115
Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln
1 5 10 15
Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr
20 25 30
Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu
35 40 45
Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50 55 60
Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Val Ala Ala Thr Arg Ala
65 70 75 80
Ala Gly Leu Lys Gly Cys Ser Met Leu Val Cys Gly Asp Asp Leu Val
85 90 95
Val Ile Cys Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg
100 105 110
Ala

<210> 116
<211> 340
<212> DNA
<213> hepatitis C virus

<400> 116
ctccactgtg actgagagag acatcaaggt cgaagaagaa gtctatcagt gttgtgatct 60
ggagcccagag gcccgcaagg taatagccgc cctcacggag agactctacg tgggcggccc 120
catgcataac agcaaggagg acctttgcgg gtatcgtaga tgccgcgcga gcggcgtata 180

caccaccagc ttcgggaaca caatgacgtg ctaccttaag gcctcagcag ccatcagggc 240
 tgcggggcta aaggattgca ccatgctggt ttgcggtgac gacctagtcg tgatcgccga 300
 gagcgggtggc gttgaggagg acaaacgagc cctcggagct 340

<210> 117

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 117

Ser Thr Val Thr Glu Arg Asp Ile Lys Val Glu Glu Glu Val Tyr Gln
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ala Ala Leu Thr
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
 50 55 60

Gly Asn Thr Met Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
 65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95

Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
 100 105 110

Ala

<210> 118

<211> 574

<212> DNA

<213> hepatitis C virus

<400> 118

acttgccggt ttgccgacct catgggatac atcccgctcg taggcgcccc tgtgggtggc 60

gtcgccaggg ccctggcaca cgggtgtagg gctgtggagg acgggatcaa ttatgcgaca 120

gggaatcttc ccggttgctc tttctctatc ttctctttgg cacttctttc gtgcctgact 180

gttccacact cggccgtcaa ctatcgcaat gcctcgggca tctatcacat caccaatgac 240
 tgcccgaact cgagcatagt gtacgagacc gagcaccaca tcctacacct cccaggggtg 300
 ttacctgcg tgaggggttg gaatcagtca cgctgctggg tggccctcac tcccaccgtg 360
 gcggcgcctt acatcggcgc tccgcttgaa tccctccgga gtcattgtga tctgatggta 420
 ggtgccgcta ctgctgtctc cgctctttac atcggagacc tgtgcgggtg cgtattcttg 480
 gttgggtcaga tgttctcttt ccagccgcgg cgccactgga ctacgcagga ctgcaattgt 540
 tccatctacg cggggcacgt tacgggccac agga 574

<210> 119

<211> 191

<212> PRT

<213> hepatitis C virus

<400> 119

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser
 50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Thr Glu His His Ile Leu His
 85 90 95

Leu Pro Gly Cys Leu Pro Cys Val Arg Val Gly Asn Gln Ser Arg Cys
 100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ala Pro Tyr Ile Gly Ala Pro
 115 120 125

Leu Glu Ser Leu Arg Ser His Val Asp Leu Met Val Gly Ala Ala Thr
 130 135 140

Ala Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Val Thr Gly His Arg
180 185 190

<210> 120

<211> 574

<212> DNA

<213> hepatitis C virus

<400> 120
acgtgcggct ttgccgacct catgggatac atcccgcctcg tgggcgcccc tgtgggtggc 60
gtcgccaggg ccttggcaca tgggtgtcagg gccgtggagg acgggattaa ctatgcaaca 120
gggaatcttc ccggttgctc cttttctatc ttccttctag cacttctctc gtgcttgact 180
gtcccggcct cggcgcagca ctaccggaac atctcgggca tttatcacgt caccaatgac 240
tgcccgaact ctagtatagt gtatgaagct gaccatcata tcatgcatct accaggggtg 300
gtgccttgcg tgagaaccgg gaacacctcg cgctgctggg ttcctttaac acccactgtg 360
gctgccccct atgttggcgc gccgctcgaa tccatgcggc ggcacgtgga cttaatgggtg 420
ggtgccgcca ccgtctgctc ggccctgtac atcggagacc tttgcggagg tgtcttctctg 480
gtcgggcaga tgttcacctt ccggccgcgc cgccattgga ctaccagga ctgcaactgc 540
tctatctatg atggccacat caccggccat agaa 574

<210> 121

<211> 191

<212> PRT

<213> hepatitis C virus

<400> 121

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Thr Ser Arg Cys
100 105 110

Trp Val Pro Leu Thr Pro Thr Val Ala Ala Pro Tyr Val Gly Ala Pro
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Val Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Phe Arg Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Asp Gly His Ile Thr Gly His Arg
180 185 190

<210> 122

<211> 574

<212> DNA

<213> hepatitis C virus

<400> 122

acgtgcggtc	tcgccgacct	catgggatac	atccccgctcg	tgggcgcccc	cgttgggggc	60
gtcgccaggg	ccctggcgca	tggcgtcagg	gctgtggagg	acgggattaa	ctatgcgaca	120
gggaatcttc	ccggttgctc	tttctctatc	ttcctcctgg	cacttctttc	gtgcctcact	180
gtcccagcgt	cagctgagca	ctaccggaat	gcttcgggca	tctatcacat	caccaatgac	240
tgtccgaatt	ccagcgtagt	ctatgaaact	gaccaccata	tattgcactt	gccgggggtgc	300
gtaccctgcg	tgagggccgg	gaacgtgtct	cgttgctgga	cgccggtaac	acctacgggtg	360
gctgccgtat	ccatggacgc	tcgctcgag	tccttccggc	ggcatgtgga	cctaattgga	420
ggtgcggcca	ccgtgtgttc	tgtctctat	gttgagagacc	tctgtggagg	tgctttccta	480
gtggggcaga	tggtcacctt	ccagccgcgt	cgccactgga	ccacgcagga	ttgtaattgc	540
tccatctata	ctggccatat	caccggccac	agga			574

<210> 123

<211> 191

<212> PRT

<213> hepatitis C virus

<400> 123

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Val Val Tyr Glu Thr Asp His His Ile Leu His
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Ala Gly Asn Val Ser Arg Cys
100 105 110

Trp Thr Pro Val Thr Pro Thr Val Ala Ala Val Ser Met Asp Ala Pro
115 120 125

Leu Glu Ser Phe Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Val Cys Ser Val Leu Tyr Val Gly Asp Leu Cys Gly Gly Ala Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg
180 185 190

<210> 124

<211> 31

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCP206

<400> 124

tggggatccc gtatgatacc cgctgctttg a

31

<210> 125

<211> 30

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCP207

<400> 125

ggcgggaattc ctggtcatac cctccgtgaa

30

<210> 126

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 126

Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile
1 5 10

<210> 127

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 127

Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val
1 5 10

<210> 128

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 128

Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile
1 5 10

<210> 129

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 129

Val Tyr Glu Thr Glu His His Ile Leu His Leu
1 5 10

<210> 130

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 130

Val Tyr Glu Ala Asp His His Ile Met His Leu
1 5 10

<210> 131

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 131

Val Tyr Glu Thr Asp His His Ile Leu His Leu
1 5 10

<210> 132

<211> 13
<212> PRT
<213> hepatitis C virus

<400> 132

Val Arg Val Gly Asn Gln Ser Arg Cys Trp Val Ala Leu
1 5 10

<210> 133
<211> 13
<212> PRT
<213> hepatitis C virus

<400> 133

Val Arg Thr Gly Asn Thr Ser Arg Cys Trp Val Pro Leu
1 5 10

<210> 134
<211> 13
<212> PRT
<213> hepatitis C virus

<400> 134

Val Arg Ala Gly Asn Val Ser Arg Cys Trp Thr Pro Val
1 5 10

<210> 135
<211> 10
<212> PRT
<213> hepatitis C virus

<400> 135

Ala Pro Tyr Ile Gly Ala Pro Leu Glu Ser
1 5 10

<210> 136
<211> 10
<212> PRT

<213> hepatitis C virus

<400> 136

Ala Pro Tyr Val Gly Ala Pro Leu Glu Ser
1 5 10

<210> 137

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 137

Ala Val Ser Met Asp Ala Pro Leu Glu Ser
1 5 10

<210> 138

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 138

Gln Pro Arg Arg His Trp Thr Thr Gln Asp
1 5 10

<210> 139

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 139

Arg Pro Arg Arg His Trp Thr Thr Gln Asp
1 5 10

<210> 140

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 140

Arg Pro Arg Arg His Trp Thr Thr Gln Asp
1 5 10

<210> 141

<211> 23

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr109

<400> 141

tgggatatga tgatgaactg gtc

23

<210> 142

<211> 24

<212> DNA

<213> artificial

<220>

<221> misc_feature

<223> HCPr14

<400> 142

ccaggtacaa ccgaaccaat tgcc

24

<210> 143

<211> 957

<212> DNA

<213> hepatitis C virus

<400> 143

atgagcacia atcctaaacc tcaaagaaaa accaaaagaa acactaaccg ccgcccacag

60

gacgtcaagt tcccgggcgg tggccagatc gttggtggag tatacttggt gccgcgcagg

120

ggcccccggt tgggtgtgcg cgcgacgagg aaaacttccg agcgggtccca gccacgtggg 180
 aggcgccagc ccatcccca agatcggcgc cccactggca agtcctgggg aaaaccagga 240
 tacccttggc ccctgtacgg gaatgagggc ctcggctggg caggggtggct cctgtccccc 300
 cgaggggtctc gcccgtcatg gggcccaact gacccccggc acaggtcacg caacttgggt 360
 aaggtcatcg atacccttac gtgtggcttt gccgacctca tggggtacat ccctgtcgtc 420
 ggcgccccag ttggtggtgt cgccagagct ctcgcgcatg gcgtgagagt tctggaagac 480
 gggataaact atgcaacagg gaacttgccc gggtgtctct tttctatctt cttattggcc 540
 ctgctatctt gtatcactgt gccggtctcc ggcttgacag tcaagaacac cagcagctct 600
 tacatggtaa ccaatgactg ccagaacagt agcatcgtct ggcagctcag ggatgctggt 660
 cttcacgtcc ccgggtgtgt cccttgtgag gagaagggca acatatcccg ctgttgata 720
 ccggtttcgc ccaatatagc tgtgagccaa cctggtgcgc ttaccaaggg cctgcggacg 780
 catattgata ccatcattgc atccgctacg ttttgcctct ccctgtacat aggagacctg 840
 tgtggcgcggt tgatgttggc ttctcaagtc ttcacatctt cgccccagca tcataagttt 900
 gtccaggact gcaactgttc catataccca ggccacatca ctggacatcg gatggcg 957

<210> 144

<211> 319

<212> PRT

<213> hepatitis C virus

<400> 144

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
 1 5 10 15
 Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
 20 25 30
 Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
 35 40 45
 Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
 50 55 60
 Ile Pro Lys Asp Arg Arg Pro Thr Gly Lys Ser Trp Gly Lys Pro Gly
 65 70 75 80
 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Leu Gly Trp Ala Gly Trp
 85 90 95
 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
 100 105 110

Arg His Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Val Val Gly Ala Pro Val
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
165 170 175

Phe Leu Leu Ala Leu Leu Ser Cys Ile Thr Val Pro Val Ser Gly Leu
180 185 190

Gln Val Lys Asn Thr Ser Ser Ser Tyr Met Val Thr Asn Asp Cys Gln
195 200 205

Asn Ser Ser Ile Val Trp Gln Leu Arg Asp Ala Val Leu His Val Pro
210 215 220

Gly Cys Val Pro Cys Glu Glu Lys Gly Asn Ile Ser Arg Cys Trp Ile
225 230 235 240

Pro Val Ser Pro Asn Ile Ala Val Ser Gln Pro Gly Ala Leu Thr Lys
245 250 255

Gly Leu Arg Thr His Ile Asp Thr Ile Ile Ala Ser Ala Thr Phe Cys
260 265 270

Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Ala Val Met Leu Ala Ser
275 280 285

Gln Val Phe Ile Ile Ser Pro Gln His His Lys Phe Val Gln Asp Cys
290 295 300

Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala
305 310 315

<210> 145

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 145

ctcaacgggc acggagaggg acatcagaac tgaggagtcc atataccttg cttgctcttt

60

acccgagcag gcacggactg ccatacactc actgactgag aggctttacg tgggagggcc 120
 catgctaaac agcaaagggc aaacctgcgg atacagacgc tgccgcgcca gcggagtgtt 180
 caccactagc atgggaaata ccatcacgtg ctacgtgaag gcacaagcag cctgtaaggc 240
 tgcgggcata attgccccca cgatgctggt gtgcggcgac gatctagttg tcatctcaga 300
 gagtcagggg accgaggagg acgagcggaa cctacgagcc 340

<210> 146

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 146

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Leu
 1 5 10 15

Ala Cys Ser Leu Pro Glu Gln Ala Arg Thr Ala Ile His Ser Leu Thr
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Leu Asn Ser Lys Gly Gln Thr
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met
 50 55 60

Gly Asn Thr Ile Thr Cys Tyr Val Lys Ala Gln Ala Ala Cys Lys Ala
 65 70 75 80

Ala Gly Ile Ile Ala Pro Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95

Val Ile Ser Glu Ser Gln Gly Thr Glu Glu Asp Glu Arg Asn Leu Arg
 100 105 110

Ala

<210> 147

<211> 345

<212> DNA

<213> hepatitis C virus

<400> 147

atgagcacac ttctaaacc acaaagaaaa accaaaagaa acaccaaccc cggccacagg 60

acgttaagtt cccaggcggc ggtcagatcg ttggtggagt ttacgtgcta ccacgcaggg 120
 gccccagtt ggggtgtcgt gcagtgcga agacttccga gcggtcgcaa cctcgcagta 180
 ggcgccaacc catccccagg gcgcgccgaa ccgagggcag gtcctgggct cagccccggg 240
 acccttggcc cctatatggg aatgagggct gcgggtgggc aggggtggctc ctgtccccgc 300
 gcggctctcg cccgtcgtgg ggcccaaagt acccccggcg cagga 345

<210> 148

<211> 115

<212> PRT

<213> hepatitis C virus

<400> 148

Met Ser Thr Leu Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
 1 5 10 15

Pro Gly His Arg Thr Leu Ser Ser Gln Ala Ala Val Arg Ser Leu Val
 20 25 30

Glu Phe Thr Cys Tyr His Ala Gly Ala Pro Ser Trp Val Cys Val Gln
 35 40 45

Cys Ala Arg Leu Pro Ser Gly Arg Asn Leu Ala Val Gly Ala Asn Pro
 50 55 60

Ser Pro Gly Arg Ala Glu Pro Arg Ala Gly Pro Gly Leu Ser Pro Gly
 65 70 75 80

Thr Leu Gly Pro Tyr Met Gly Met Arg Ala Ala Gly Gly Gln Gly Gly
 85 90 95

Ser Cys Pro Arg Ala Ala Leu Ala Arg Arg Gly Ala Gln Met Thr Pro
 100 105 110

Gly Ala Gly
 115

<210> 149

<211> 280

<212> DNA

<213> hepatitis C virus

<400> 149

ggcctgtgac ctcaaggacg aggctaggag ggtgataact tcactcacgg agcggcttta 60
 ctgtgggtggt cctatgttca acagcaaggg acaacactgc ggttaccgcc gctgccgtgc 120
 tagtggggtg ctaccacca gcttcgggaa cacaatcacc tggtacatca aagcaaaggc 180
 agctaccaaa gctgccggaa ttaaaaatcc atcattcctt gtctgcggag atgacttggt 240
 cgtgattgct gagagtgcag ggatcgatga ggacagagcg 280

<210> 150

<211> 93

<212> PRT

<213> hepatitis C virus

<400> 150

Ala Cys Asp Leu Lys Asp Glu Ala Arg Arg Val Ile Thr Ser Leu Thr
 1 5 10 15

Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Gln His
 20 25 30

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe
 35 40 45

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Lys Ala Ala Thr Lys Ala
 50 55 60

Ala Gly Ile Lys Asn Pro Ser Phe Leu Val Cys Gly Asp Asp Leu Val
 65 70 75 80

Val Ile Ala Glu Ser Ala Gly Ile Asp Glu Asp Arg Ala
 85 90

<210> 151

<211> 499

<212> DNA

<213> hepatitis C virus

<400> 151

atgagcacga atcctaaacc tcaaagaaaa accaaaagaa acaccaaccg tcgcccacag 60
 gacgtcaagt tcccggggcg tggtcagatc gttggcggag tttacttggt gccgcgcagg 120
 ggccctagga tgggtgtgcg cgcgactcgg aagacttcgg aacggtcgca accccgtgga 180
 cggcgtcagc ctattcccaa ggcgcgccag cccacgggcc ggtcctgggg tcaaccggg 240
 tacccttggc ccctttacgc caatgagggc ctcgggtggg caggggtggct gctctccct 300

cgaggctctc ggcctaattg gggccccaat gacccccggc gaaaatcgcg taatttgggt 360
aaggtcatcg ataccctaac gtgcggattc gccgatctca tggggatatat cccgctcgta 420
ggcgggcccca ttggggggcgt cgcaagggtc ctcgcacacg gtgtgagggt ccttgaggac 480
ggggtaaact atgcaacag 499

<210> 152

<211> 166

<212> PRT

<213> hepatitis C virus

<400> 152

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
145 150 155 160

Gly Val Asn Tyr Ala Thr
165

<210> 153

<211> 579
 <212> DNA
 <213> hepatitis C virus

<400> 153
 acgtgcggat tcgccgatct catgggggtac atcccgctcg taggcggccc cgttgggggc 60
 gtcgcaaggg ctctcgaca cgggtgtgagg gtccttgagg acggggtaaa ctatccaaca 120
 gggaatttac ccggttgctc tttctctatc tttattcttg ctcttctctc gtgtctgacc 180
 gttccggcct ctgcagttcc ctaccgaaat gcctctggga tttatcatgt taccaatgat 240
 tgcccaaact cttccatagt ctatgaggca gataacctga tcctacacgc acctggttgc 300
 gtgccttggtg tcatgacagg taatgtgagt agatgctggg tccaaattac ccctacactg 360
 tcagccccga gcctcggagc agtcacggct cctcttcgga gagccgttga ctacctagcg 420
 ggaggggctg ccctctgctc cgcgttatac gtaggagacg cgtgtggggc actattcttg 480
 gtaggcaaaa tgttcaccta taggcctcgc cagcacgcta cgggtgcagaa ctgcaactgt 540
 tccatttaca gtggccatgt taccggccac cggatggcg 579

<210> 154
 <211> 193
 <212> PRT
 <213> hepatitis C virus

<400> 154
 Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly
 1 5 10 15
 Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
 20 25 30
 Glu Asp Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45
 Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60
 Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
 65 70 75 80
 Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His
 85 90 95

Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys
100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val
115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln
165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met
180 185 190

Ala

<210> 155

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 155

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acgtgcggat tcgccgacct cgtgggggtac atccccgctcg taggcggccc cgttgggggc      60
gtcgcaaggg ctctcgca ca tgggtgtgagg gttcttgagg acggggtgaa ttatgcaaca      120
gggaatctgc ctggttgctc tttctctatc ttcattcttg cacttctctc gtgcctcact      180
gtccccgcct ctgcagttcc ctaccgaaat gcctctggga tctatcatgt caccaatgat      240
tgcccaaact cttccatagt ctatgaggca gatgatctga tcctacacgc acctggctgc      300
gtgccttggtg tcaggaaaga taatgtgagt aggtgctggg tccaaattac cccacgctg      360
tcagccccga gcttcggagc agtcacggct ccccttcgga gagccgttga ttacttggtg      420
ggaggggctg ccctctgctc cgcgttatac gttggagacg cgtgtggggc actatttttg      480
gtaggccaaa tgttcaccta taggcctcgc cagcatgcta cggtgcagga ctgcaactgt      540
tccatctaca gtggccacgt caccggccat cagatggca                                579

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<210> 156

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 156

Thr Cys Gly Phe Ala Asp Leu Val Gly Tyr Ile Pro Leu Val Gly Gly
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Leu Ile Leu His
85 90 95

Ala Pro Gly Cys Val Pro Cys Val Arg Lys Asp Asn Val Ser Arg Cys
100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Phe Gly Ala Val
115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Val Gly Gly Ala Ala
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Gln Met
180 185 190

Ala

<210> 157

<211> 530

<212> DNA

<213> hepatitis C virus

<400> 157
cacctacgac agctctgctg gtggcccagt tactgcggat tccccaagtg gtcattgaca 60
tcatcgcagg gagccactgg ggggtcttgt ttgccgccgc atactatgca tcggtggcta 120
actggaccaa ggtcgtgctg gtcttgtttc tgtttgagg ggttgatgct actaccaga 180
tttcgggagg ctccagcgcc caaacgacgt atggcatcgc ctcatttatc acccgaggcg 240
cgcagcagaa actgcagctc ataaatacca acggaagctg gcacatcaac aggaccgccc 300
ttaattgtaa tgacagcctc cagactgggt tcatagccgg cctcttctac taccataagt 360
tcaactcttc tggatgcccg gatcggatgg ctagctgtag ggcccttgcc acttttgacc 420
agggctgggg aactatcagc tatgccaaca tatcgggtcc cagtgatgac aaaccatatt 480
gctggcacta tccccacgg ccgtgcggag tgggtgccagc ccaagaggtc 530

<210> 158

<211> 176

<212> PRT

<213> hepatitis C virus

<400> 158

Pro Thr Thr Ala Leu Leu Val Ala Gln Leu Leu Arg Ile Pro Gln Val
1 5 10 15
Val Ile Asp Ile Ile Ala Gly Ser His Trp Gly Val Leu Phe Ala Ala
20 25 30
Ala Tyr Tyr Ala Ser Val Ala Asn Trp Thr Lys Val Val Leu Val Leu
35 40 45
Phe Leu Phe Ala Gly Val Asp Ala Thr Thr Gln Ile Ser Gly Gly Ser
50 55 60
Ser Ala Gln Thr Thr Tyr Gly Ile Ala Ser Phe Ile Thr Arg Gly Ala
65 70 75 80
Gln Gln Lys Leu Gln Leu Ile Asn Thr Asn Gly Ser Trp His Ile Asn
85 90 95
Arg Thr Ala Leu Asn Cys Asn Asp Ser Leu Gln Thr Gly Phe Ile Ala
100 105 110
Gly Leu Phe Tyr Tyr His Lys Phe Asn Ser Ser Gly Cys Pro Asp Arg
115 120 125
Met Ala Ser Cys Arg Ala Leu Ala Thr Phe Asp Gln Gly Trp Gly Thr
130 135 140

Ile Ser Tyr Ala Asn Ile Ser Gly Pro Ser Asp Asp Lys Pro Tyr Cys
 145 150 155 160

Trp His Tyr Pro Pro Arg Pro Cys Gly Val Val Pro Ala Gln Glu Val
 165 170 175

<210> 159

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 159
 ctcgaccgtt accgaacatg acataatgac cgaagagtcc atttaccaat catgtgactt 60
 gcagcccag gcacgcgcag caatacgggtc actcacccaa cgctctact gtggaggccc 120
 catgtacaac agcaaggggc aacagtgtgg ttatcgaga tgccgcgcca gcggcgtttt 180
 caccaccagt atgggcaaca ccatgacgtg ctacatcaag gctttagcct cctgtagagc 240
 cgcaaggctc cgggactgca cgctcctggt gtgtggtgac gatcttgtgg ccatctgcga 300
 gagccagggg acacacgagg atgaagcaag cctgagagcc 340

<210> 160

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 160

Ser Thr Val Thr Glu His Asp Ile Met Thr Glu Glu Ser Ile Tyr Gln
 1 5 10 15

Ser Cys Asp Leu Gln Pro Glu Ala Arg Ala Ala Ile Arg Ser Leu Thr
 20 25 30

Gln Arg Leu Tyr Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met
 50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Ala
 65 70 75 80

Ala Arg Leu Arg Asp Cys Thr Leu Leu Val Cys Gly Asp Asp Leu Val
 85 90 95

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Glu Ala Ser Leu Arg
100 105 110

Ala

<210> 161

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 161
ctcaaccgcc accgaacatg acatattgac tgaagagtcc atataccaat catgtgactc 60
gcagcccgcag gcacgcgcag caatacgggtc actcacccaa cgcttggttct gtggaggccc 120
catgtataac agcaaggggc aacaatgtgg ttatcgcaga tgccgcgcca gcggcgtctt 180
caccaccagt atgggcaaca ccatgacgtg ctacattaag gctttagcct cctgtagaac 240
cgctggggctc cgggactaca cgctcctggt gtgtgggtgac gatcatgtgg ccatctgcga 300
gagccagggg acacacgagg atgaagcgaa cctgagagcc 340

<210> 162

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 162

Ser Thr Ala Thr Glu His Asp Ile Leu Thr Glu Glu Ser Ile Tyr Gln
1 5 10 15

Ser Cys Asp Ser Gln Pro Asp Ala Arg Ala Ala Ile Arg Ser Leu Thr
20 25 30

Gln Arg Leu Phe Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Thr
65 70 75 80

Ala Gly Leu Arg Asp Tyr Thr Leu Leu Val Cys Gly Asp Asp His Val

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Glu Ala Asn Leu Arg
 100 105 110

Ala

<210> 163

<211> 499

<212> DNA

<213> hepatitis C virus

<400> 163

atgagcacga atcctaaact tcaaagaaaa accaaacgta acaccaaccg ccgccccatg 60
 gacgttaagt tcccgggttg tggccagatc gttggcggag tttacttggt gccgcgcagg 120
 ggccctaggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggg 180
 aggcgccaac ctatcccca ggcgcgccga tccgagggca gacccctggg gcagcccggg 240
 tatccttggc cccctttacg caatgagggc tgtgggtggg cagggtggct cctgtcccct 300
 cgcgggtctc ggccgtcttg gggccctaata gatccccggc ggaggtcccg caacctgggt 360
 aaggtcatcg ataccctaac atgcggcttc gccgacctca tgggatacat cccgcttgta 420
 ggcgcccccg tgggtggcgt cgccagagcc ctggcacacg gtgttagggc tgtggaagac 480
 gggatcaact acgcaacag 499

<210> 164

<211> 166

<212> PRT

<213> hepatitis C virus

<400> 164

Met Ser Thr Asn Pro Lys Leu Gln Arg Lys Thr Lys Arg Asn Thr Asn
 1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
 35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
 50 55 60

Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Pro Gly
 65 70 75 80
 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
 85 90 95
 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro
 100 105 110
 Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
 115 120 125
 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Val
 130 135 140
 Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val Glu Asp
 145 150 155 160
 Gly Ile Asn Tyr Ala Thr
 165

<210> 165
 <211> 499
 <212> DNA
 <213> hepatitis C virus

<220>
 <221> misc_feature
 <222> (306)..(306)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (313)..(313)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (340)..(340)
 <223> "n" is any nucleotide

<400> 165
atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccctatg 60
gacgttaagt tcccaggcgg tggtcagatc gttggcggag ttacttggt gccgcgcagg 120
ggccccaggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggg 180
aggcgccaac ctatcccca ggcgcgccga accgagggca gatcctgggc gcagcccggg 240
tataccttggc ccctttacgg caatgagggc tgtgggtggg caggggtggct cctgtcccct 300
cgcggnctct ggncgtcttg gggccccaat gatccccggn ggagatccc caacttgggt 360
aagggtcatcg atacctaac atgcggcttc gccgacctca tgggatacat cccgcttgta 420
ggcgcccccg tgggtggcgt cgccagggcc ctggcacatg gtgttagggc tgtggaagac 480
gggatcaatt atgcaacag 499

<210> 166
<211> 126
<212> PRT
<213> hepatitis C virus

<220>
<221> MISC_FEATURE
<222> (102)..(102)
<223> "Xaa" is any amino acid

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> "Xaa" is any amino acid

<220>
<221> MISC_FEATURE
<222> (114)..(114)
<223> "Xaa" is any amino acid

<400> 166
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Arg Thr Glu Gly Arg Ser Trp Ala Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
85 90 95

Leu Leu Ser Pro Arg Xaa Ser Arg Xaa Ser Trp Gly Pro Asn Asp Pro
100 105 110

Arg Xaa Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu
115 120 125

<210> 167

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 167
 acatgcggct tcgccgacct catgggatac atcccgcttg taggcgcccc cgtgggtggc 60
 gtcgccaggg ccctggcaca tgggtgtagg gctgtggaag acgggatcaa ttatgcaaca 120
 gggaaccttc ccggttgctc cttttctatc ttctcttgg cgctcctctc gtgcctgact 180
 gttcccatat cggccgttaa ctatcgcaat gcttcgggca tttatcacat caccaatgac 240
 tgcccgaatg caagcatagt gtacgagacc gaaaatcaca tcttacacct cccaggggtgc 300
 gtaccctgtg tgaggactgg gaaccagtcg cgggtgttggg tggccctcac tcccacagta 360
 gcgtcgccat acgccggtgc tccgcttgag cccttgcggc gtcattgtga cctgatggta 420
 ggtgctgcca ccatgtgttc cgccctctac atcggcgact tgtgcggtgg cttattcttg 480
 gtgggcaaaa tggtcacctt ccaaccgcga cgtcactgga ccactcagga ctgcaattgt 540
 tccatctaca cgggccacat tacgggtcat cggatggca 579

<210> 168

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 168

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser
50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
65 70 75 80

Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Glu Asn His Ile Leu His
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys
100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Ala Gly Ala Pro
115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Met Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Leu Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met
180 185 190

Ala

<210> 169

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 169
 acatgctggct tcgccgacct catgggatac atccccgcttg taggcgcccc cgtgggtggc 60
 gtcgccagag ccctggcaca cgggtgttagg gctgtggaag acgggatcaa ctacgcaaca 120
 gggaatctcc ccggttgctc cttttctatc ttctcttgg cacttctctc gtgcctcact 180
 gttcccgctg cgggcgttaa ctatcgcaat gcttcgggcg tttatcacat caccaacgac 240
 tgcccgaatg cgagcatagt gtacgagacc gacaatcaca tcttacacct cccagggtgc 300
 gtaccctgtg tgaagaccgg gaaccagtcg cgggtgttggg tggccctcac tcccacagtg 360
 gcgtcgctt acgtcgggtgc tccgctcgag cccttgccgc gccatgtgga cctgatggta 420
 ggtgctgcca ccgtgtgctc cgccctctac gtcggcgacc tgtgcgggtg cttattcttg 480
 gtaggcaaaa tggtcacctt ccaaccgcga cgccactgga cgaccagga ctgtaattgt 540
 tccatctacg cagggcatac tacgggccat cggatggct 579

<210> 170

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 170

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15
 Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30
 Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45
 Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60
 Gly Val Asn Tyr Arg Asn Ala Ser Gly Val Tyr His Ile Thr Asn Asp
 65 70 75 80
 Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Asp Asn His Ile Leu His
 85 90 95
 Leu Pro Gly Cys Val Pro Cys Val Lys Thr Gly Asn Gln Ser Arg Cys
 100 105 110
 Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Val Gly Ala Pro
 115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
 130 135 140

Val Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Leu Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
 165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Ile Thr Gly His Arg Met
 180 185 190

Ala

<210> 171

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 171

acatgcggct tcgccgacct catgggatac atcccgttg tgggcgcccc tgttggtggc	60
gtcgccagag cccttgcgca cggcgtcagg gctgtggaag acgggattaa ctatgcaaca	120
gggaaccttc ctggttgctc cttttctatc ttccttctgg cacttctctc gtgcctgact	180
gtccccgcct cggctgtgca ttatcacaac acctcgggca tctaccacct caccaatgac	240
tgccctaact ctagcatagt ctttgaggca gtccatcaca tcttgacact tccaggatgc	300
gtcccttggtg taagaactgg gaaccagtct cgggtgctggg tagccttgac cccacgctg	360
gccgcgccat accttggcgc tccactcgag tccatgcggc gtcacgtgga tttgatggtg	420
ggcactgcta cattgtgctc agcactctac gttggggacc tgtgcggggg catattccta	480
gcggggccaga tgttcacctt ccggccccgc ctccattgga ccaccaggga gtgcaattgt	540
tccacctatc cggggccacat cacgggtcat agaatggcg	579

<210> 172

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 172

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60

Ala Val His Tyr His Asn Thr Ser Gly Ile Tyr His Leu Thr Asn Asp
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Phe Glu Ala Val His His Ile Leu His
 85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys
 100 105 110

Trp Val Ala Leu Thr Pro Thr Leu Ala Ala Pro Tyr Leu Gly Ala Pro
 115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Thr Ala Thr
 130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Ile Phe Leu
 145 150 155 160

Ala Gly Gln Met Phe Thr Phe Arg Pro Arg Leu His Trp Thr Thr Gln
 165 170 175

Glu Cys Asn Cys Ser Thr Tyr Pro Gly His Ile Thr Gly His Arg Met
 180 185 190

Ala

<210> 173

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 173

acgtgcggtt ccgccgacct catgggatac atcccgcctcg taggcgcccc tgtgggtggc 60

gtcgccaggg ccttggcgca tggcgtcagg gctgtggagg acgggataaa ctatgcaaca 120

gggaaccttc ctggttgctc tttttctatc ttccttctgg cacttctctc gtgcctgact 180

gtccccgcct cagctgtgca ttatcacaac acctcgggca tctatcacat cactaatgac 240
 tgccctaact ctagcatagt ctttgaggca gagcatcaca tcttgcattc tccaggatgc 300
 gtccccctgtg tgagaactgg gaaccagtca cgatgctgga tagccttgac ccctacgttg 360
 gccgcgccac acattggcgc tccacttgag tccatgcgac gtcattgtgga tttgatggta 420
 ggcaactgcca cattgtgctc cgcactctac attggagatc tgtgcggagg catatttcta 480
 gtggggcaga tgttcaactt caggccccgc ctgcactgga ccaccagga gtgcaattgt 540
 tccatctatc caggccacat cacgggtcac agaatggcg 579

<210> 174

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 174

Thr Cys Gly Ser Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60

Ala Val His Tyr His Asn Thr Ser Gly Ile Tyr His Ile Thr Asn Asp
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Phe Glu Ala Glu His His Ile Leu His
 85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys
 100 105 110

Trp Ile Ala Leu Thr Pro Thr Leu Ala Ala Pro His Ile Gly Ala Pro
 115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Thr Ala Thr
 130 135 140

Leu Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Ile Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Asn Phe Arg Pro Arg Leu His Trp Thr Thr Gln
165 170 175

Glu Cys Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met
180 185 190

Ala

<210> 175

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 175
acgtgaggct ttgccgacct catgggatac atcccgctcg tgggcgcccc tgtgggtggc 60
gtcgccaggg ccttggcaca tgggtgtcagg gccgtggagg acgggattaa ctatgcaaca 120
gggaatcttc ccggttgctc cttttctatc ttccttctag cacttctctc gtgcttgact 180
gtccccggcct cggcgcagca ctaccggaac atctcgggca tttatcacgt caccaatgac 240
tgccccgaact ctagtatagt gtatgaagct gaccatcata tcatgcatct accaggggtg 300
gtgccttgcg tgagaaccgg gaacacctcg cgctgctggg ttcctttaac accactgtg 360
gctgccccct atgttggcgc gccgctcgaa tccatgcggc ggacacgtga cttaatggtg 420
ggtgccgcca ccgtctgctc ggccctgtac atcggagacc tttgcggagg tgtcttcctg 480
gtcgggcaga tgttcacctt ccggccgcgc cgccattgga ctaccagga ctgcaactgc 540
tctatctatg atggccacat caccggccat agaatggct 579

<210> 176

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 176

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Thr Ser Arg Cys
100 105 110

Trp Val Pro Leu Thr Pro Thr Val Ala Ala Pro Tyr Val Gly Ala Pro
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Val Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Phe Arg Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Asp Gly His Ile Thr Gly His Arg Met
180 185 190

Ala

<210> 177

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 177

acgtgcgggt tcgccgacct catgggatac atccccgctcg tgggcgctcc agtaggaggc 60
gtcgccagag ccttggcgca tggcgtcagg gctgtggagg acgggatcaa ttacgcaaca 120
gggaaccttc ccggctgctc cttttctatc ttcctcttgg tacttctctc gcgcctaact 180
gtcccagcgt ctgctcagca ctaccggaat gcatcgggca tctaccatgt caccaacgac 240
tgcccgaact ccagtattgt gtatgaagcc gaccatcaca tcatgcacct acccggtgtg 300
gtgccctgtg taagaactgg gaatgtctcg cgttgctgga ttcctttaac acccactgta 360
gccgtcccct acctcggggc tccacttacg tctgtacggc agcatgtgga cctgatggtg 420
ggggcgggcca ccttatgctc tgccctctac atcggagacc attgcggagg tgtcttcttg 480

gcagggcaga tggtcagttt ccaaccccgg cgtcattgga ctaccagga ttgcaactgt 540
tccatctatg tgggccacat caccggccac aggatggcc 579

<210> 178

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 178

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Phe Leu Leu Val Leu Leu Ser Arg Leu Thr Val Pro Ala Ser
50 55 60

Ala Gln His Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Val Ser Arg Cys
100 105 110

Trp Ile Pro Leu Thr Pro Thr Val Ala Val Pro Tyr Leu Gly Ala Pro
115 120 125

Leu Thr Ser Val Arg Gln His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Leu Cys Ser Ala Leu Tyr Ile Gly Asp His Cys Gly Gly Val Phe Leu
145 150 155 160

Ala Gly Gln Met Val Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Val Gly His Ile Thr Gly His Arg Met
180 185 190

Ala

<210> 179
 <211> 579
 <212> DNA
 <213> hepatitis C virus

<220>
 <221> misc_feature
 <222> (568)..(579)
 <223> "n" is any nucleotide

<400> 179
 acctgaggct tcgccgacct catgggatac atcccgtcgc taggcgcccc cgtgggaggc 60
 gtcgccagar ctctggcgca tggcgtcagg gctctggaag acgggatcaa ttatgcaaca 120
 gggaatcttc ctggttgctc tttctctatc tcccttcttg aacttctctc gtgcctgact 180
 gttcccgctt cagccatcca ctatcgcaat gcttcggacg gttattatat caccaatgat 240
 tgcccgaact ctagcatagt gtatgaagcc gagaaccaca tcttgacact tccggggtgt 300
 ataccctgtg tgaagaccgg gaatcagtcg cgggtgctggg tggctctcac cccacgctg 360
 gcggcccccac acctacgtgc tccgctttcg tccttacggg cgcattgtgga cctaattggtg 420
 ggggcccga cggcatgctc cgctttttac attggagatc tgtgcggggg tgtgtttttg 480
 gcgggccaac tgttcactat ccggccacgc attcatgaaa ccactcagga ctgcaattgc 540
 tccatctact cagggcacat cacgggtnnn nnnnnnnnn 579

<210> 180
 <211> 193
 <212> PRT
 <213> hepatitis C virus

<220>
 <221> MISC_FEATURE
 <222> (24)..(24)
 <223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (190)..(193)

<223> "Xaa" is any amino acid

<400> 180

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15

Pro Val Gly Gly Val Ala Arg Xaa Leu Ala His Gly Val Arg Ala Leu
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45

Ser Ile Ser Leu Leu Glu Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60

Ala Ile His Tyr Arg Asn Ala Ser Asp Gly Tyr Tyr Ile Thr Asn Asp
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Glu Asn His Ile Leu His
85 90 95

Leu Pro Gly Cys Ile Pro Cys Val Lys Thr Gly Asn Gln Ser Arg Cys
100 105 110

Trp Val Ala Leu Thr Pro Thr Leu Ala Ala Pro His Leu Arg Ala Pro
115 120 125

Leu Ser Ser Leu Arg Ala His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Ala Cys Ser Ala Phe Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu
145 150 155 160

Ala Gly Gln Leu Phe Thr Ile Arg Pro Arg Ile His Glu Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Ile Thr Gly Xaa Xaa Xaa
180 185 190

Xaa

<210> 181

<211> 579

<212> DNA

<213> hepatitis C virus

<220>

<221> misc_feature

<222> (152)..(152)

<223> "n" is any nucleotide

<400> 181
gcgtgctggct tcgccgatct catgggatac atcccgcctc taggcgcccc cgtgggtggc 60
gtcgccagag ccctggcgca cgggtgttagg gctgtggagg acgggattaa ctacgcaaca 120
gggaatcttc ctggttgctc tttctctatc tnccttctgg cacttctctc gtgcctgact 180
gtcccggcct cggctcagca ctaccggaat gtctcgggca tctaccacgt caccaatgat 240
tgcccgaatt ccagcatagt gtatgaagcc gatcaccaca tcatgcactt accagggatg 300
ataccctgcg tgaggaccgg gaacgtttcg cgctgctggg tatctctgac acctactgtg 360
gctgctccct acctcggggc tccgcttacg tcgctacggc ggcatgtgga tttgatggtg 420
gggtgcagcca ccctttgctc tgccctctac gtcggagacc tctgtggagg tgtcttccta 480
gtgggacaga tgttcacctt ccagccgcgc cgccactgga ccactcagga ctgcaactgc 540
tccattttacg tcggccacat cacaggccac agaattggct 579

<210> 182

<211> 193

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (51)..(51)

<223> "Xaa" is any amino acid

<400> 182

Ala Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15
Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45
 Ser Ile Xaa Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60
 Ala Gln His Tyr Arg Asn Val Ser Gly Ile Tyr His Val Thr Asn Asp
 65 70 75 80
 Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His
 85 90 95
 Leu Pro Gly Cys Ile Pro Cys Val Arg Thr Gly Asn Val Ser Arg Cys
 100 105 110
 Trp Val Ser Leu Thr Pro Thr Val Ala Ala Pro Tyr Leu Gly Ala Pro
 115 120 125
 Leu Thr Ser Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
 130 135 140
 Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Val Phe Leu
 145 150 155 160
 Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
 165 170 175
 Asp Cys Asn Cys Ser Ile Tyr Val Gly His Ile Thr Gly His Arg Met
 180 185 190

Ala

<210> 183

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 183

acctgagggt	ttgccgacct	catgggatac	atcccgtctg	taggcgcccc	tgtgggtggc	60
gtcgccaggg	ccctagaaca	cggtgttagg	gctgtggagg	acggtattaa	ttatgcaaca	120
gggaatctcc	ccggttgctc	tttttctatc	tccctcttgg	cacttctttc	gtgcctgact	180
gttcccacct	cagccgtcaa	ctatcgcaac	gcctcgggcg	tctatcatat	caccaatgac	240
tgcccgaatt	cgagcatagt	gtacgaggct	gactaccaca	tcctacacct	ccctgggtgc	300
ttaccctgcg	tgagggttgg	gaatcagtca	cgctgctggg	tggcccttac	tcccaccgtg	360

gcggcgccctt acgttggtgc tccgctagaa tccctccgga gtcattgtgga tctgatggta 420
 ggtgctgcta ctgtgtgctc cgctctttac atcggggacc tgtgcggtgg cgtatttttg 480
 gttggtcaga tgttttcttt ccagccgcga cgccactgga ccacgcagga ctgcaattgt 540
 tctatctacg cggggcacgt tacgggccac aggatggca 579

<210> 184

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 184

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser
 50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
 65 70 75 80

Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Glu Asn His Ile Leu His
 85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys
 100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Ala Gly Ala Pro
 115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
 130 135 140

Met Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Leu Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
 165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met
 180 185 190

Ala

<210> 185
<211> 579
<212> DNA
<213> hepatitis C virus

<400> 185
acttgcggct ttgccgacct catgggatac atcccgctcg taggcgcccc cgtgggtggc 60
gtcgccagag ccctggaaca tgggtgttagg gctgtggagg acggcatcaa ttatgcaaca 120
gggaatctcc ccggttgctc tttctctatc tacctcttgg cacttctctc gtgcctgact 180
gttcccacct cggccatcca ctatcgcaat gcctcgggcg tctaccacgt caccaatgac 240
tgcccgaact cgagcatagt gtacgaggcc gaccaccaca tcctacacct tccaggggtgc 300
ttaccctgtg tgaggggttg gaatcagtca cgttggtggg tggccctctc tcccaccgtg 360
gcggcgctt acatcggtgc tccagttgaa tccttccgga gacacgtgga catgatggtg 420
ggcgctgcta ctgtgtgctc cgctctctat attggggact tgtgtggtgg cgtattcttg 480
gttggtcaga tgttttcttt ccggccacga cgccactgga ctacgcagga ctgcaattgt 540
tccatctacg cggggcacat cactggccac ggaatggca 579

<210> 186
<211> 193
<212> PRT
<213> hepatitis C virus

<400> 186
Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15
Pro Val Gly Gly Val Ala Arg Ala Leu Glu His Gly Val Arg Ala Val
20 25 30
Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45
Ser Ile Tyr Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser
50 55 60
Ala Ile His Tyr Arg Asn Ala Ser Gly Val Tyr His Val Thr Asn Asp

65		70		75		80									
Cys	Pro	Asn	Ser	Ser	Ile	Val	Tyr	Glu	Ala	Asp	His	His	Ile	Leu	His
				85					90					95	
Leu	Pro	Gly	Cys	Leu	Pro	Cys	Val	Arg	Val	Gly	Asn	Gln	Ser	Arg	Cys
			100					105					110		
Trp	Val	Ala	Leu	Ser	Pro	Thr	Val	Ala	Ala	Pro	Tyr	Ile	Gly	Ala	Pro
		115					120					125			
Val	Glu	Ser	Phe	Arg	Arg	His	Val	Asp	Met	Met	Val	Gly	Ala	Ala	Thr
	130					135					140				
Val	Cys	Ser	Ala	Leu	Tyr	Ile	Gly	Asp	Leu	Cys	Gly	Gly	Val	Phe	Leu
145					150					155					160
Val	Gly	Gln	Met	Phe	Ser	Phe	Arg	Pro	Arg	Arg	His	Trp	Thr	Thr	Gln
				165					170					175	
Asp	Cys	Asn	Cys	Ser	Ile	Tyr	Ala	Gly	His	Ile	Thr	Gly	His	Gly	Met
			180					185					190		

Ala

<210> 187

<211> 579

<212> DNA

<213> hepatitis C virus

<400> 187

acttgccggt	ttgccgacct	catgggatac	atcccgcctcg	taggcgcccc	tgtgggtggc	60
gtcgccaggg	ccctggcaca	cggtgttagg	gctgtggagg	acgggatcaa	ttatgcgaca	120
gggaatcttc	ccggttgctc	tttctctatc	ttcctcttgg	cacttctttc	gtgcctgact	180
gttccccacct	cggccgtcaa	ctatcgcaat	gcctcgggca	tctatcacat	caccaatgac	240
tgcccgaact	cgagcatagt	gtacgagacc	gagcaccaca	tcctacacct	cccaggggtg	300
ttaccctgcg	tgaggggttg	gaatcagtca	cgctgctggg	tggccctcac	tcccaccgtg	360
gcggcgcctt	acatcggcgc	tccgcttgaa	tccctccgga	gtcatgtgga	tctgatggta	420
gggtgccgcta	ctgcgtgctc	cgctctttac	atcggagacc	tgtgcggtgg	cgtatttttg	480
gttggtcaga	tgttctcttt	ccagccgcgg	cggcactgga	ctacgcagga	ctgcaattgt	540
tccatctacg	cggggcacgt	tacgggccac	aggatggca			579

<210> 188
 <211> 193
 <212> PRT
 <213> hepatitis C virus

<400> 188

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
 1 5 10 15
 Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
 20 25 30
 Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45
 Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser
 50 55 60
 Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
 65 70 75 80
 Cys Pro Asn Ser Ser Ile Val Tyr Glu Thr Glu His His Ile Leu His
 85 90 95
 Leu Pro Gly Cys Leu Pro Cys Val Arg Val Gly Asn Gln Ser Arg Cys
 100 105 110
 Trp Val Ala Leu Thr Pro Thr Val Ala Ala Pro Tyr Ile Gly Ala Pro
 115 120 125
 Leu Glu Ser Leu Arg Ser His Val Asp Leu Met Val Gly Ala Ala Thr
 130 135 140
 Ala Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu
 145 150 155 160
 Val Gly Gln Met Phe Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln
 165 170 175
 Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Val Thr Gly His Arg Met
 180 185 190

Ala

<210> 189
 <211> 579

<212> DNA

<213> hepatitis C virus

<400> 189
acgtgcggtc tcgccgacct catgggatac atcccgcctcg tgggcgcccc cgttgggggc 60
gtcgccaggg ccctggcgca tggcgtcagg gctgtggagg acgggattaa ctatgcgaca 120
gggaatcttc ccggttgctc tttctctatc ttcttcttgg cacttctttc gtgcctcact 180
gtcccagcgt cagctgagca ctaccggaat gcttcgggca tctatcacat caccaatgac 240
tgtccgaatt ccagcgtagt ctatgaaact gaccaccata tattgcactt gccgggggtgc 300
gtaccttgcg tgagggccgg gaacgtgtct cgttgctgga cgccggtaac acctacggtg 360
gctgccgtat ccatggacgc tccgctcgag tccttccggc ggcattgtgga cctaattgga 420
ggtgccggca ccgtgtgttc tgcctctat gttggagacc tctgtggagg tgctttccta 480
gtggggcaga tggtcacctt ccagccgcgt cgccactgga ccacgcagga ttgtaattgc 540
tccatctata ctggccatat caccggccac aggatggcg 579

<210> 190

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 190

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala
1 5 10 15
Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val
20 25 30
Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
35 40 45
Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
50 55 60
Ala Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp
65 70 75 80
Cys Pro Asn Ser Ser Val Val Tyr Glu Thr Asp His His Ile Leu His
85 90 95
Leu Pro Gly Cys Val Pro Cys Val Arg Ala Gly Asn Val Ser Arg Cys
100 105 110

Trp Thr Pro Val Thr Pro Thr Val Ala Ala Val Ser Met Asp Ala Pro
115 120 125

Leu Glu Ser Phe Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr
130 135 140

Val Cys Ser Val Leu Tyr Val Gly Asp Leu Cys Gly Gly Ala Phe Leu
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met
180 185 190

Ala

<210> 191

<211> 289

<212> DNA

<213> hepatitis C virus

<400> 191
atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccccatg 60
gacgttaagt tcccgggagg tggccagatc gttggtggag ttacttggt gccgcgcagg 120
ggccccaggt tgggtgtgag cgcgactagg aagacttcgg agcgggtcgca acctcgtggg 180
agacgtcagc ctatccccaa ggcacgtcga tctgagggaa ggtcctgggc tcagccccggg 240
taccatggc ctctttacgg taatgagggg tgtgggtggg caggatggg 289

<210> 192

<211> 96

<212> PRT

<213> hepatitis C virus

<400> 192

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
 35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
 50 55 60

Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Pro Gly
 65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
 85 90 95

<210> 193

<211> 498

<212> DNA

<213> hepatitis C virus

<400> 193
 atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccctatg 60
 gacgtaaagt tcccgggagg tggacagatc gttggcggag ttacttggt gccgcgcagg 120
 ggcccccggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggc 180
 aggcgtcaac ctatcccaa ggcgcgccgg tccgagggca ggtcctgggc gcaagccggg 240
 taccctggc ccctctatgg caatgagggc tgtgggtggg cagggtggct cctgtctcct 300
 cgcggtctc ggcatcttg gggcccaaat gatccccggc ggagatcgcg caatctgggt 360
 aaggatcatg ataccctgac gtgcggcttc gccgacctca tgggatacat cccgctcgtg 420
 ggcgccccg tcgggggagc cgccagggcc ctggcgcatg gcgtcagggc tgtggaggac 480
 gggattaact atcgacag 498

<210> 194

<211> 166

<212> PRT

<213> hepatitis C virus

<400> 194

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
 1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
 35 40 45
 Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
 50 55 60
 Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Ala Gly
 65 70 75 80
 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
 85 90 95
 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro
 100 105 110
 Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
 115 120 125
 Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Val
 130 135 140
 Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val Glu Asp
 145 150 155 160
 Gly Ile Asn Tyr Arg Gln
 165

<210> 195
 <211> 579
 <212> DNA
 <213> hepatitis C virus

<400> 195
 acgtgcggaat tcgccgacct cgtgggggtac atcccgctcg taggcggccc cgttgggggc 60
 gtcgcaaggg ctctcgaca tgggtgtgagg gttcttgagg acggggtgaa ttatgcaaca 120
 gggaatctgc ctggttgctc tttctctatc ttcattcttg cacttctctc gtgcctcact 180
 gtcccggcct ctgcagttcc ctaccgaaat gcctctggga tctatcatgt caccaatgat 240
 tgcccaaact cttccatagt ctatgaggca gatgatctga tcctacacgc acctggctgc 300
 gtgccttggtg tcaggaaaga taatgtgagt aggtgctggg tccaaattac cccacgctg 360
 tcagccccga gcttcggagc agtcacggct ccccttcgga gagccgttga ttacttggtg 420
 ggaggggctg ccctctgctc cgcgttatac gttggagacg cgtgtggggc actatttttg 480
 gtaggccaaa tggtcaccta taggcctcgc cagcatgcta cggtgcagga ctgcaactgt 540
 tccatctaca gtggccacgt caccggccat cagatggca 579

<210> 196
 <211> 193
 <212> PRT
 <213> hepatitis C virus

<400> 196

Thr Cys Gly Phe Ala Asp Leu Val Gly Tyr Ile Pro Leu Val Gly Gly
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
 20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
 35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
 50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Leu Ile Leu His
 85 90 95

Ala Pro Gly Cys Val Pro Cys Val Arg Lys Asp Asn Val Ser Arg Cys
 100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Phe Gly Ala Val
 115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Val Gly Gly Ala Ala
 130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu
 145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln
 165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Gln Met
 180 185 190

Ala

<210> 197

<211> 1485
 <212> DNA
 <213> hepatitis C virus

<220>
 <221> misc_feature
 <222> (787)..(787)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (1011)..(1011)
 <223> "n" is any nucleotide

<220>
 <221> misc_feature
 <222> (1444)..(1444)
 <223> "n" is any nucleotide

<400> 197
 tgtgccagga ccatcaccac cggagcttct atcacatact ccacttacgg caagttcctt 60
 gctgatggag ggtgttcagg cggcgcgcac gacgtgatca tatgcgacga gtgccattcc 120
 caggacgcca ccaccattct tgggataggc actgtccttg accaggcaga gacggctgga 180
 gctaggctcg tcgtcttggc cacggccacc cctcccggca gtgtgacaac gccccacccc 240
 aacatcgagg aagtggccct gcctcaggag ggggaggttc ctttctacgg cagagccatt 300
 ccccttgctt ttataaaggg tggtaggcat ctcatcttct gccattcaa gaaaaaatgt 360
 gatgaactcg ccaagcaact gaccagcctg ggcgtgaacg ccgtggcata ttatagaggt 420
 ctagacgtcg ccgtcatacc cacaacagga gacgtggtcg tgtgcagcac cgacgcgctc 480
 atgacgggat tcaccggcga ctttgattct gtcatagact gcaactccgc cgtcactcag 540
 acggtggact tcagtctgga tcccactttt accattgaga ctaccacagt gccccaggac 600
 gcagtgtcca gaagccagcg ttggggccgc acggggagag gtaggcacgg catataccgg 660
 tatgtctcgg ctggagagag accgtctggc atgttcgact ccgtggtgct ctgtgagtgc 720
 tacgatgccg gatgtgcatg gtacgatctg actcctgccg agactaccgt gaggttgccg 780
 gcttacntaa acacccccgg gtcacctgtc tgtcaggacc atttggaatt ctgggagggg 840

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gtgttcacgg ggctcactaa catcgacgct cacatgctgt cacagaccaa acaggggtggg      900
gagaatttcc cataccttgt agcgtaccaa gcaacagtct gtgttcgcgc gaaagcgccc      960
ccccccagct gggacacaat gtggaaatgc atgctccgtc tcaaaccgac nttactggc      1020
cctactcccc tcttgtagag gctggggccc gtccagaatg agatcacact gacgcacccc      1080
atcaccaagt acattatggc ttgcatgtct gcggacttgg aggtcattac cagcacttgg      1140
gttctgggtg ggggcgttgt ggcgggccctg gcggcctact gcttgacggt gggttcggtg      1200
gccatagtcg gtaggatcat cctctctggg aaacctgccg tcattcccga tagggaggta      1260
ttataaccagc aatttgatga gatggaggag tgctcggcct cggtgcccta tatggacgaa      1320
acacgtgccg ttgccggaca attcaaagag aaagtgctcg gcttcacag cacgaccggc      1380
cagaaggctg aaactctgaa gccggcagcc acgtctgtgt ggaacaaggc tgagcagttc      1440
tgggccacat acatgtggaa cttcatcagt gggatacaat aatag                        1485

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<210> 198

<211> 484

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (263)..(263)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (337)..(337)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (482)..(482)

<223> "Xaa" is any amino acid

<400> 198

Cys Ala Arg Thr Ile Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr
1 5 10 15

Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala His Asp Val
 20 25 30
 Ile Ile Cys Asp Glu Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly
 35 40 45
 Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val
 50 55 60
 Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro
 65 70 75 80
 Asn Ile Glu Glu Val Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr
 85 90 95
 Gly Arg Ala Ile Pro Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile
 100 105 110
 Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Lys Gln Leu Thr
 115 120 125
 Ser Leu Gly Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ala
 130 135 140
 Val Ile Pro Thr Thr Gly Asp Val Val Val Cys Ser Thr Asp Ala Leu
 145 150 155 160
 Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser
 165 170 175
 Ala Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile
 180 185 190
 Glu Thr Thr Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Trp
 195 200 205
 Gly Arg Thr Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala
 210 215 220
 Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Val Val Leu Cys Glu Cys
 225 230 235 240
 Tyr Asp Ala Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr
 245 250 255
 Val Arg Leu Arg Ala Tyr Xaa Asn Thr Pro Gly Leu Pro Val Cys Gln
 260 265 270
 Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile

275

280

285

Asp Ala His Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Phe Pro
 290 295 300

Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro
 305 310 315 320

Pro Pro Ser Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro
 325 330 335

Xaa Leu Thr Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln
 340 345 350

Asn Glu Ile Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys
 355 360 365

Met Ser Ala Asp Leu Glu Val Ile Thr Ser Thr Trp Val Leu Val Gly
 370 375 380

Gly Val Val Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val
 385 390 395 400

Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro
 405 410 415

Asp Arg Glu Val Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser
 420 425 430

Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe
 435 440 445

Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu
 450 455 460

Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe
 465 470 475 480

Trp Xaa Thr Tyr

<210> 199

<211> 1485

<212> DNA

<213> hepatitis C virus

<220>

<221> misc_feature
 <222> (684)..(684)
 <223> "n" is any nucleotide

<220>

<221> misc_feature
 <222> (909)..(909)
 <223> "n" is any nucleotide

<220>

<221> misc_feature
 <222> (1058)..(1058)
 <223> "n" is any nucleotide

<220>

<221> misc_feature
 <222> (1133)..(1133)
 <223> "n" is any nucleotide

<400> 199
 tgtgccagga ccatcaccac cggagcttct atcacatact ccacttacgg caagttcctt 60
 gctgatggag ggtgttcagg cggcgcgtat gacgtgatca tatgcgacga gtgccatttc 120
 caggacgcca ccaccattct tgggataggc actgtccttg accaggcaga gacggctgga 180
 gctaggctcg tcgtcttggc cacggccacc cctcccggca gtgtgacaac gccccacccc 240
 aacatcgagg aagtggccct gcctcaggag ggggagggtc ctttctacgg cagagccatt 300
 ccccttgctt ttataaaggg tggtaggcat ctcatcttct gccattccaa gaaaaaatgt 360
 gatgaactcg ccaagcaact gaccagcctg ggcgtgaacg ccgtggcata ttatagaggt 420
 ctagacgtcg ccgtcatccc cacagcagga gacgtggtcg tgtgcagcac cgacgcgctc 480
 atgacgggat tcaccggcga ctttgattct gtcatagact gcaactccgc cgtcactcag 540
 acggtggact tcagtctgga tcccactttt accattgaga ctaccacagt gccccaggac 600
 gcagtgtcca gaagccagcg tagggggccgc acggggagag gtaggcacgg catataccgg 660
 tatgtctcgg ctggagagag accntctgac atgttcgact ccgtggtgct ctgtgagtgc 720
 tacgatgccg gatgtgcgtg gtatgatctg actcctgccg agactaccgt gaggttgccg 780
 gcttacataa acacccccgg gctccctgtc tgtcaggacc atttgggaatt ctgggagggg 840

gtgttcacgg ggctcactaa catcgacgct cacatgctgt cacagaccaa acaggggtggg	900
gagaatttnc cataccttgt agcgtaccaa gcaacagtct gtgttcgcgc gaaagcgccc	960
ccccccagct gggacacaat gtggaaatgc atgctccgtc tcaaaccgac tttaactggc	1020
cctactcccc tcttgtacag gctggggccc gtccagantg agatcacact gacgcacccc	1080
atcaccaagt acattatggc ttgcatgtct gcggacttgg aggtcattac cancacttgg	1140
gttctgggtg ggggcgttgt ggcggccctg gcggcctact gcttgacggt gggttcggtg	1200
gccatagtcg gtaggatcat cctctctggg aaacctgccg tcattcccga tagggaggca	1260
ttataaccagc aatttgatga gatggaggag tgctcggcct cgttgcccta tatggacgag	1320
acacgtgccg ttgccggaca attcaaagag aaagtgctcg gcttcatcag cacgaccggc	1380
cagaaggctg aaactctgaa gccggcagcc acgtctgtgt ggaacaaggc tgagcagttc	1440
tggggccacat acatgtggaa cttcatcagc gggatacaat aatag	1485

<210> 200

<211> 484

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (228)..(228)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (303)..(303)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (353)..(353)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (378)..(378)

<223> "Xaa" is any amino acid

<400> 200

Cys Ala Arg Thr Ile Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr
1 5 10 15
Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Val
20 25 30
Ile Ile Cys Asp Glu Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly
35 40 45
Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val
50 55 60
Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro
65 70 75 80
Asn Ile Glu Glu Val Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr
85 90 95
Gly Arg Ala Ile Pro Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile
100 105 110
Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Lys Gln Leu Thr
115 120 125
Ser Leu Gly Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ala
130 135 140
Val Ile Pro Thr Ala Gly Asp Val Val Val Cys Ser Thr Asp Ala Leu
145 150 155 160
Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser
165 170 175
Ala Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile
180 185 190
Glu Thr Thr Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Arg
195 200 205
Gly Arg Thr Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala
210 215 220
Gly Glu Arg Xaa Ser Asp Met Phe Asp Ser Val Val Leu Cys Glu Cys
225 230 235 240

Tyr Asp Ala Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr
245 250 255

Val Arg Leu Arg Ala Tyr Ile Asn Thr Pro Gly Leu Pro Val Cys Gln
260 265 270

Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile
275 280 285

Asp Ala His Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Xaa Pro
290 295 300

Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro
305 310 315 320

Pro Pro Ser Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro
325 330 335

Thr Leu Thr Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln
340 345 350

Xaa Glu Ile Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys
355 360 365

Met Ser Ala Asp Leu Glu Val Ile Thr Xaa Thr Trp Val Leu Val Gly
370 375 380

Gly Val Val Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val
385 390 395 400

Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro
405 410 415

Asp Arg Glu Ala Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser
420 425 430

Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe
435 440 445

Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu
450 455 460

Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe
465 470 475 480

Trp Ala Thr Tyr

<210> 201

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 201

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ctccactgtg actgagagag acatcagggg cgaagaagaa gtctatcagt gttgtgatct    60
ggagcccgag gcccgcaagg taataaccgc cctcacggag agactctacg tgggcggccc    120
tatgtacaat agcaagggag acctttgcgg gtatcgcagg tgccgcgcaa gcggcgata    180
taccaccagc ttcgggaaca cactgacgtg ctaccttaaa gcctcagcag ccatcagggc    240
tgcggggctg aaggactgca ccatgctggt ttgcggtgac gacttagtcg tgatcgctga    300
aagcgggtggc gtcgaggagg acaagcgagc cctcggagct    340
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<210> 202

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 202

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Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
1           5           10          15
```

```
Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr
20          25          30
```

```
Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu
35          40          45
```

```
Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50          55          60
```

```
Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
65          70          75          80
```

```
Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
85          90          95
```

```
Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
100         105         110
```

Ala

<210> 203

<211> 340
 <212> DNA
 <213> hepatitis C virus

<400> 203
 ctccacagtg actgaaagag acatcagggg cgaggaagag gtctaccagt gttgtgacct 60
 ggagcctgaa acccgcaagg taatatctgc cctcactgaa agactctatg tgggcggtcc 120
 catgcacaac agcaggggag acctatgcgg gtaccgtaga tgccgcgcga gcggcggtata 180
 caccacaagc ttcgggaaca ctctgacgtg cttcctcaag gccacagcgg ccaccaaagc 240
 cgctggccta aaggactgca ccatgttggt gtgtggtgac gacttagtcg ttatcgccga 300
 aagcgatggt gtcgaagagg accgccgagc cctcggagct 340

<210> 204
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<400> 204
 Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
 1 5 10 15
 Cys Cys Asp Leu Glu Pro Glu Thr Arg Lys Val Ile Ser Ala Leu Thr
 20 25 30
 Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Arg Gly Asp Leu
 35 40 45
 Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
 50 55 60
 Gly Asn Thr Leu Thr Cys Phe Leu Lys Ala Thr Ala Ala Thr Lys Ala
 65 70 75 80
 Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95
 Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Arg Arg Ala Leu Gly
 100 105 110
 Ala

<210> 205
 <211> 340
 <212> DNA
 <213> hepatitis C virus

<400> 205
 ctccacggtg accgaaaggg atatcaggac cgaggaagag atctaccagt gctgcgacct 60
 ggagcccgaag gcccgcaagg tgatatccgc cctaacggaa agactctacg tgggcggtcc 120
 catgtacaac tccaaggggg acctatgcgg gcaacggagg tgccgcgcaa gcgggggtcta 180
 caccaccagc ttcgggaaca ctgtaacgtg ttatctcaag gccgttgagg ctactagggc 240
 cgcaggtctg aaaggttgca gcatgctggt ttgtggagac gacttagtcg tcactgcga 300
 gagcggcggc gtagaggagg atgcaagagc cctccgagcc 340

<210> 206
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<400> 206
 Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln
 1 5 10 15
 Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr
 20 25 30
 Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu
 35 40 45
 Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
 50 55 60
 Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Val Ala Ala Thr Arg Ala
 65 70 75 80
 Ala Gly Leu Lys Gly Cys Ser Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95
 Val Ile Cys Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg
 100 105 110
 Ala

<210> 207
 <211> 340
 <212> DNA
 <213> hepatitis C virus

<400> 207
 ctccacggtg actgaaaggg acattagggg cgaggaagag atctaccagt gctgtgacct 60
 ggagcccagag gcacgcaagg tgatatccgc tctcacagaa agactctaca agggcggccc 120
 catgtataac agcaaggggg acctatgcgg gcttcggagg tgccgcgcaa gcgggggtata 180
 caccacaagc ttcgggaaca cggtgacatg ctaccttaaa gccacagcag ccaccagggc 240
 tgcaggggctg aaagattgca ctatgctggg atgcggtgac gacttagtcg ttattgccga 300
 aagcgggtggc gtggaggagg acgcccagag cctccgagcc 340

<210> 208
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<400> 208
 Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln
 1 5 10 15
 Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr
 20 25 30
 Glu Arg Leu Tyr Lys Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu
 35 40 45
 Cys Gly Leu Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
 50 55 60
 Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala
 65 70 75 80
 Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95
 Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg
 100 105 110
 Ala

<210> 209
 <211> 340
 <212> DNA
 <213> hepatitis C virus

 <220>
 <221> misc_feature
 <222> (13)..(13)
 <223> "n" is any nucleotide

 <220>
 <221> misc_feature
 <222> (23)..(23)
 <223> "n" is any nucleotide

 <220>
 <221> misc_feature
 <222> (65)..(65)
 <223> "n" is any nucleotide

 <220>
 <221> misc_feature
 <222> (72)..(72)
 <223> "n" is any nucleotide

 <220>
 <221> misc_feature
 <222> (277)..(277)
 <223> "n" is any nucleotide

 <220>
 <221> misc_feature
 <222> (337)..(337)

<223> "n" is any nucleotide

<400> 209
ccccaccgtg acngagaggg acntcagggg cgaggaagag gtctatcagt gctgtaatct 60
ggagnccgat gnccgcaagg tcatcaacgc cctcacagag agactctacg tgggcgggccc 120
tatgcacaac agcaagggag acctgtgtgg catccgtaga tgccgcgcga gcggcggttta 180
caccacgagc ttcggaaaca cgctgacttg ctacctcaaa gccacagcgg ccaccagggc 240
cgcgggcctg aaggattgca ccatgctggt ctgcgngnac gacctgggtg tcattgctga 300
gagcattggc atagacgagg acaagcaagc cctccgnact 340

<210> 210

<211> 113

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC_FEATURE

<222> (8)..(8)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (22)..(22)

<223> "Xaa" is any amino acid

<220>

<221> MISC_FEATURE

<222> (24)..(24)

<223> "Xaa" is any amino acid

<400> 210

Pro Thr Val Thr Glu Arg Asp Xaa Arg Val Glu Glu Glu Val Tyr Gln
1 5 10 15

Cys Cys Asn Leu Glu Xaa Asp Xaa Arg Lys Val Ile Asn Ala Leu Thr
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
35 40 45

Cys Gly Ile Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala
65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
85 90 95

Val Ile Ala Glu Ser Ile Gly Ile Asp Glu Asp Lys Gln Ala Leu Arg
100 105 110

Thr

<210> 211

<211> 340

<212> DNA

<213> hepatitis C virus

<220>

<221> misc_feature

<222> (11)..(11)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (327)..(327)

<223> "n" is any nucleotide

<220>

<221> misc_feature

<222> (333)..(334)

<223> "n" is any nucleotide

<220>

<221> misc_feature
 <222> (340)..(340)
 <223> "n" is any nucleotide

<400> 211
 ctcgactgtg nccgagaggg acatcaggac agagggagag gtctatcagt gttgcgacct 60
 ggaaccggaa gcccgcaagg taatcaccgc cctcactgag agactctatg tgggcggacc 120
 catgttcaac agcaagggag acctgtgcgg acaacgccgg tgccgcgcaa gcggcgtggt 180
 caccaccagc ttcgggaaca cactgacgtg ctaccttaaa gccacagctg ctactagagc 240
 agccggctta aaagattgca ccatgctggt ctgcggtgac gacttagtcg ttatttccga 300
 gagcgccggt gtggaggagg atcccanaac ccnncgaccn 340

<210> 212
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> "Xaa" is any amino acid

<220>
 <221> MISC_FEATURE
 <222> (109)..(109)
 <223> "Xaa" is any amino acid

<220>
 <221> MISC_FEATURE
 <222> (111)..(111)
 <223> "Xaa" is any amino acid

<400> 212
 Ser Thr Val Xaa Glu Arg Asp Ile Arg Thr Glu Gly Glu Val Tyr Gln
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Phe Asn Ser Lys Gly Asp Leu
 35 40 45

Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Phe
 50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala
 65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95

Val Ile Ser Glu Ser Ala Gly Val Glu Glu Asp Pro Xaa Thr Xaa Arg
 100 105 110

Pro

<210> 213

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 213
 ctcaacagtc accgagaacg acatccgtgt tgaggagtca atttaccaat gttgtgactt 60
 ggcccccgag gccagacagg ccataaagtc gctcacagag cggctttata tcgggggtcc 120
 cctgactaat tcaaaggggc agaactgtgg ctatcgccga tgccgcgcaa gcggcgtgct 180
 gacgaccagc tgcggaata cccttacatg ttacctaaag gcctctgcag cctgtcgagc 240
 tgcaagctc caggactgca cgatgctcgt gtgcggggac gacctgtcg ttatctgtga 300
 aagcgcggga acccaagagg acgcggcgag cctacgagtc 340

<210> 214

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 214

Ser Thr Val Thr Glu Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln

1 5 10 15
 Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Lys Ser Leu Thr
 20 25 30
 Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn
 35 40 45
 Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys
 50 55 60
 Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala
 65 70 75 80
 Ala Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95
 Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg
 100 105 110

val

<210> 215
 <211> 340
 <212> DNA
 <213> hepatitis C virus

<400> 215
 ctcaaccgtc acggagaggg atataagaac agaagaatcc atatatcaag cttgttcctt 60
 gcccgaagag gccagaactg tcatacactc gctcaccgag agactctacg tgggagggcc 120
 catgataaac agcaaagggc aatcctgcgg ttacaggcgt tgccgcgcaa gcggtgtttt 180
 caccaccagc atggggaata ccatgacgtg ttacatcaaa gcccttgagc cgtgtaaagc 240
 cgcagggatc gtggaccccg tcatgctggt gtgtggagac gacctgggtc tcatctcgga 300
 gagccagggt aacgaggagg acgagcgaaa cctgagagct 340

<210> 216
 <211> 113
 <212> PRT
 <213> hepatitis C virus

<400> 216

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Gln
 1 5 10 15

Ala Cys Ser Leu Pro Gln Glu Ala Arg Thr Val Ile His Ser Leu Thr
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Ile Asn Ser Lys Gly Gln Ser
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met
 50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ala Cys Lys Ala
 65 70 75 80

Ala Gly Ile Val Asp Pro Val Met Leu Val Cys Gly Asp Asp Leu Val
 85 90 95

Val Ile Ser Glu Ser Gln Gly Asn Glu Glu Asp Glu Arg Asn Leu Arg
 100 105 110

Ala

<210> 217

<211> 340

<212> DNA

<213> hepatitis C virus

<400> 217
 ctcgactgtc actgaacagg acatcagggg ggaagaggag atatatcaat gctgcaacct 60
 tgaaccggag gccaggaaag tgatctcctc cctcacggag cggctttact gcggaggccc 120
 tatgtttaac agcaaggggg cccagtgtgg ttatcgccgt tgccgtgcca gtggagttct 180
 gcctaccagc ttgggaaca caatcacttg ttacatcaag gccacaacgg ccgcgaaggc 240
 cgcaggcctc cggaaccgg actttcttgt ctgcggagat gatctggtcg tgggtggctga 300
 gagtgatggc gtcgacgagg atagagcagc cctgagagcc 340

<210> 218

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 218

Ser Thr Val Thr Glu Gln Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln
1 5 10 15

Cys Cys Asn Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ser Leu Thr
20 25 30

Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Ala Gln
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Thr Ala Ala Lys Ala
65 70 75 80

Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp Leu Val
85 90 95

Val Val Ala Glu Ser Asp Gly Val Asp Glu Asp Arg Ala Ala Leu Arg
100 105 110

Ala

<210> 219

<211> 10

<212> PRT

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<400> 219

Arg Ser Glu Gly Arg Thr Ser Trp Ala Gln
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<210> 220

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 220

Arg Ser Glu Gly Arg Thr Ser Trp Ala Gln
1 5 10

<210> 221

<211> 10
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<400> 221

Arg Thr Glu Gly Arg Thr Ser Trp Ala Gln
 1 5 10

<210> 222
 <211> 629
 <212> DNA
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<400> 222
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 agactaagca gcagggactc aactttctcgt tcctgactgc ctaccaagcc actgtgtgcg 120
 ctcgcgcgca ggctcctccc ccaagttggg acgagatgtg gaagtgtctc gtacggctta 180
 agccaacact acatggacct acgcctcttc tatatcggtt ggggcctgtc caaaatgaaa 240
 tctgcttgac acaccccatc acaaaatata tcatggcatg catgtcagct gatctggaag 300
 taaccaccag cacctgggtt ttgcttggag gggctctcgc ggccctagcg gcctactgct 360
 tgtcagtcgg ttgtgttggtg attgtgggtc atatcgagct ggggggcaag ccggcaatcg 420
 ttccagacaa agaggtgttg tatcaacaat acgatgagat ggaagagtgc tcacaagctg 480
 ccccatatat cgaacaagct caggtaatag ctaccagtt caaggaaaaa gtccttggat 540
 tgctgcagcg agccacccaa caacaagctg tcattgagcc catagtaact accaactggc 600
 aaaagcttga ggccttttgg cacaagcat 629

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 <211> 209
 <212> PRT
 <213> hepatitis C virus

<400> 223

Asp Phe Trp Glu Ser Val Phe Thr Gly Leu Thr His Ile Asp Ala His
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Phe Leu Ser Gln Thr Lys Gln Gln Gly Leu Asn Phe Ser Phe Leu Thr
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Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser
35 40 45

Trp Asp Glu Met Trp Lys Cys Leu Val Arg Leu Lys Pro Thr Leu His
50 55 60

Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile
65 70 75 80

Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser Ala
85 90 95

Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu Gly Gly Val Leu
100 105 110

Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys Val Val Ile Val
115 120 125

Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val Pro Asp Lys Glu
130 135 140

Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys Ser Gln Ala Ala
145 150 155 160

Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln Phe Lys Glu Lys
165 170 175

Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln Ala Val Ile Glu
180 185 190

Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala Phe Trp His Lys
195 200 205

His

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<211> 12

<212> PRT

<213> hepatitis C virus

<400> 224

Ile His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile
1 5 10

<210> 225

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 225

Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile
1 5 10

<210> 226

<211> 12

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<400> 226

Val Asn Tyr Arg Asn Ala Ser Gly Val Tyr His Ile
1 5 10

<210> 227

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 227

Val Asn Tyr His Asn Thr Ser Gly Ile Tyr His Leu
1 5 10

<210> 228

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 228

Gln His Tyr Arg Asn Ala Ser Gly Ile Tyr His Val
1 5 10

<210> 229

<211> 12

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<213> hepatitis C virus

<400> 229

Gln His Tyr Arg Asn Val Ser Gly Ile Tyr His Val
1 5 10

<210> 230

<211> 12

<212> PRT

<213> hepatitis C virus

<400> 230

Ile His Tyr Arg Asn Ala Ser Asp Gly Tyr Tyr Ile
1 5 10

<210> 231

<211> 12

<212> PRT

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<400> 231

Leu Gln Val Lys Asn Thr Ser Ser Ser Tyr Met Val
1 5 10

<210> 232

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 232

Val Trp Gln Leu Arg Ala Ile Val Leu His Val
1 5 10

<210> 233

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 233

Val Tyr Glu Ala Asp Tyr His Ile Leu His Leu
1 5 10

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Val Tyr Glu Thr Asp Asn His Ile Leu His Leu
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Val Tyr Glu Thr Glu Asn His Ile Leu His Leu
1 5 10

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<211> 11

<212> PRT

<213> hepatitis C virus

<400> 236

Val Phe Glu Thr Val His His Ile Leu His Leu
1 5 10

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<211> 11

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<400> 237

Val Phe Glu Thr Glu His His Ile Leu His Leu
1 5 10

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<211> 11

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<213> hepatitis C virus

<400> 238

Val Phe Glu Thr Asp His His Ile Met His Leu
1 5 10

<210> 239

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 239

Val Tyr Glu Thr Glu Asn His Ile Leu His Leu
1 5 10

<210> 240

<211> 11

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<213> hepatitis C virus

<400> 240

Val Tyr Glu Ala Asp Ala Leu Ile Leu His Ala
1 5 10

<210> 241

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 241

Val Gln Asp Gly Asn Thr Ser Ala Cys Trp Thr Pro Val
1 5 10

<210> 242

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 242

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu
1 5 10

<210> 243

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 243

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu
1 5 10

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<211> 13

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<213> hepatitis C virus

<400> 244

Val Arg Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu
1 5 10

<210> 245

<211> 13

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<213> hepatitis C virus

<400> 245

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Ile Ala Leu
1 5 10

<210> 246

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<213> hepatitis C virus

<400> 246

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Ile Ala Leu
1 5 10

<210> 247

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 247

Val Lys Thr Gly Asn Ser Val Arg Cys Trp Ile Pro Leu
1 5 10

<210> 248

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 248

Val Lys Thr Gly Asn Val Ser Arg Cys Trp Ile Ser Leu
1 5 10

<210> 249

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 249

Val Arg Lys Asp Asn Val Ser Arg Cys Trp Val Gln Ile
1 5 10

<210> 250

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 250

Ala Pro Ser Phe Gly Ala Val Thr Ala Pro
1 5 10

<210> 251

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 251

Val Ser Gln Pro Gly Ala Leu Thr Lys Gly
1 5 10

<210> 252

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 252

Val Lys Tyr Val Gly Ala Thr Thr Ala Ser
1 5 10

<210> 253

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 253

Ala Pro Tyr Ile Gly Ala Pro Val Glu Ser
1 5 10

<210> 254

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 254

Ala Gln His Leu Asn Ala Pro Leu Glu Ser
1 5 10

<210> 255

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 255

Ser Pro Tyr Val Gly Ala Pro Leu Glu Pro
1 5 10

<210> 256

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 256

Ser Pro Tyr Ala Gly Ala Pro Leu Glu Pro
1 5 10

<210> 257

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 257

Ala Pro Tyr Leu Gly Ala Pro Leu Glu Ser
1 5 10

<210> 258

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 258

Ala Pro Tyr Leu Gly Ala Pro Leu Glu Ser
1 5 10

<210> 259

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 259

Ala Pro Tyr Val Gly Ala Pro Leu Glu Ser
1 5 10

<210> 260

<211> 11

<212> PRT

<213> hepatitis C virus

<400> 260

Asn Val Pro Tyr Leu Gly Ala Pro Leu Thr Ser
1 5 10

<210> 261

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 261

Ala Pro His Leu Arg Ala Pro Leu Ser Ser
1 5 10

<210> 262

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 262

Ala Pro Tyr Leu Gly Ala Pro Leu Thr Ser

1	5	10
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<210> 263
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 <212> PRT
 <213> hepatitis C virus

<400> 263
 Arg Pro Arg Gln His Ala Thr Val Gln Asp
 1 5 10

<210> 264
 <211> 10
 <212> PRT
 <213> hepatitis C virus

<400> 264
 Ser Pro Gln His His Lys Phe Val Gln Asp
 1 5 10

<210> 265
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 <212> PRT
 <213> hepatitis C virus

<400> 265
 Arg Pro Arg Arg Leu Trp Thr Thr Gln Glu
 1 5 10

<210> 266
 <211> 10
 <212> PRT
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<400> 266
 Pro Pro Arg Ile His Glu Thr Thr Gln Asp
 1 5 10

<210> 267
 <211> 14
 <212> PRT
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<400> 267
 Thr Ile Ser Tyr Ala Asn Gly Ser Gly Pro Ser Asp Asp Lys
 1 5 10

<210> 268
 <211> 19
 <212> PRT
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<400> 268
 Ser Arg Arg Gln Pro Ile Pro Arg Ala Arg Arg Thr Glu Gly Arg Ser
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Trp Ala Gln

<210> 269
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 <212> DNA
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<400> 269
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 accaccattc ttgggatagg cactgtcctt gaccaggcag agacggctgg agctaggctc 180
 gtcgtcttgg ccacggccac cctcccggc agtgtgacaa cgcacccacc caacatcgag 240
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 ttataaaagg gtggtaggca tctcatcttc tgccattcca agaaaaaatg tgatgaactc 360
 gccaagcaac tgaccagcct gggcgtgaac gccgtggcat attatagagg tctagacgct 420
 gccgtcatcc ccacagcagg agacgtggct gtgtgcagca ccgacgcgct catgacggga 480
 ttcaccggcg actttgattc tgtcatagac tgcaactccg ccgtcactca gacggtggac 540
 ttcagtctgg atcccacttt taccattgag actaccacag tgccccagga cgcagtgtcc 600

agaagccagc gtaggggccg cacggggaga ggtaggcacg gcatataccg gtatgtctcg 660
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 ggatgtgctg ggtatgatct gactcctgcc gagactaccg tgagggttgcg cgcttacata 780
 aacacccccg ggctccctgt ctgtcaggac catttggaat tctgggaggg ggtgttcacg 840
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 tgggacacaa tgtggaaatg catgctccgt ctcaaaccga ctttaactgg ccctactccc 1020
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 tacattatgg cttgcatgtc tgcggacttg gaggtcatta ccagcacttg ggttctggtg 1140
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<210> 270

<211> 481

<212> PRT

<213> hepatitis C virus

<400> 270

Thr Ile Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe
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 Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Val Ile Ile Cys
 20 25 30
 Asp Glu Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr
 35 40 45
 Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala
 50 55 60
 Thr Ala Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu
 65 70 75 80
 Glu Val Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Gly Arg Ala
 85 90 95

Ile Pro Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His
 100 105 110
 Ser Lys Lys Lys Cys Asp Glu Leu Ala Lys Gln Leu Thr Ser Leu Gly
 115 120 125
 Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ala Val Ile Pro
 130 135 140
 Thr Ala Gly Asp Val Val Val Cys Ser Thr Asp Ala Leu Met Thr Gly
 145 150 155 160
 Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser Ala Val Thr
 165 170 175
 Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr
 180 185 190
 Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Arg Gly Arg Thr
 195 200 205
 Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala Gly Glu Arg
 210 215 220
 Pro Ser Asp Met Phe Asp Ser Val Val Leu Cys Glu Cys Tyr Asp Ala
 225 230 235 240
 Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr Val Arg Leu
 245 250 255
 Arg Ala Tyr Ile Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu
 260 265 270
 Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile Asp Ala His
 275 280 285
 Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Phe Pro Tyr Leu Val
 290 295 300
 Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro Pro Pro Ser
 305 310 315 320
 Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro Thr Leu Thr
 325 330 335
 Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile
 340 345 350
 Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser Ala
 355 360 365

Asp Leu Glu Val Ile Thr Ser Thr Trp Val Leu Val Gly Gly Val Val
370 375 380

Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val Ala Ile Val
385 390 395 400

Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu
405 410 415

Ala Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser Ala Ser Leu
420 425 430

Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe Lys Glu Lys
435 440 445

Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu Thr Leu Lys
450 455 460

Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe Trp Ala Thr
465 470 475 480

Tyr

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<211> 5

<212> PRT

<213> hepatitis C virus

<400> 271

Leu Glu Trp Arg Asn
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<210> 272

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 272

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg
1 5 10 15

Glu Phe Asp Glu
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<210> 273

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 273

Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln
1 5 10 15

Phe Lys Gln Lys
20

<210> 274

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 274

Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala
1 5 10 15

Ser Arg Gln Ala
20

<210> 275

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 275

Leu Ser Gly Arg Pro Ala Val Ile Pro Asp Arg Glu Val Leu Tyr Gln
1 5 10 15

Glu Phe Asp Glu
20

<210> 276

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 276

Ala Ser His Leu Pro Tyr Ile Glu Gln Gly Met Gln Leu Ala Glu Gln
1 5 10 15

Phe Lys Gln Lys
20

<210> 277

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 277

Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala
1 5 10 15

Thr Lys Gln Ala
20

<210> 278

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 278

Val Asn Gln Arg Ala Val Val Ala Pro Asp Lys Glu Val Leu Tyr Glu
1 5 10 15

Ala Phe Asp Glu
20

<210> 279

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 279

Ala Ser Arg Ala Ala Leu Ile Glu Glu Gly Gln Arg Ile Ala Glu Met
1 5 10 15

Leu Lys Ser Lys
20

<210> 280

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 280

Ile Ala Glu Met Leu Lys Ser Lys Ile Gln Gly Leu Leu Gln Gln Ala
1 5 10 15

Ser Lys Gln Ala
20

<210> 281

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 281

Leu Asn Asp Arg Val Val Val Ala Pro Asp Lys Glu Ile Leu Tyr Glu
1 5 10 15

Ala Phe Asp Glu
20

<210> 282

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 282

Ala Ser Lys Ala Ala Leu Ile Glu Glu Gly Gln Arg Met Ala Glu Met
1 5 10 15

Leu Lys Ser Lys
20